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(1) be double-spaced throughout, including table- and figure captions;

(2) include the scientific name at the first mention of each species;

(3) include capitalized standard English names for all birds, but lower case for English names of other organisms;

(4) use metric units for all measurements;

(5) use the form "7 June 2003" for all dates;

(6) use the 24-hour clock for all indications of time (e.g., 0800, 1400);

(7) use the following abbreviations: s (second), min (minute), h (hour);

(8) use active voice where at all possible.

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DISTRIBUTION AND POPULATION STATUS OF NESTING REDDISH EGRETS (*Egretta rufescens*) IN FLORIDA

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Abstract.—The Reddish Egret (*Egretta rufescens*) recently received a state-listing status of Threatened in Florida because of its small population size, recent local population declines, and restricted distribution. We implemented a statewide survey of nesting Reddish Egrets during the 2016 breeding season to estimate population size as a baseline for monitoring and to identify the largest breeding colonies to help prioritize management activities in Florida. We first prioritized potential breeding sites based on historical data, then used a combination of direct counts (i.e., counts performed by walking into a colony or by slowly circling a site in a boat), flight-line surveys (i.e., counting adults flying to and from breeding sites), and nonstandardized surveys to estimate the number of breeding pairs at 305 wading-bird breeding sites throughout Florida. Fifty-eight of the 305 sites surveyed (19%) had at least one nesting pair of Reddish Egrets. Birds were fairly evenly distributed across identified core nesting areas, with 78-86 pairs in southwest Florida, 54-88 pairs in Florida Bay, 95 pairs in the lower Florida Keys, and 34-43 pairs in or near Merritt Island National Wildlife Refuge. No nesting birds were observed north of Merritt Island on the east coast or north of Cedar Key on the Gulf coast. The estimated population size after correcting for imperfect detection at sites with direct counts was 480 nesting pairs (95% CI: 375-606). Our study and past efforts differ in survey methodology, intensity, and analytical approach, which precludes a population trend analysis. Qualitatively, however, we note that our raw count (262-312 pairs) is substantially lower than that reported in past survey efforts and that we observed no colonies as large as the three largest colonies (28, 38,

and 54 pairs) documented in Florida Bay during 1977-1978. Regular monitoring to inform management and conservation actions is warranted for this rare species. The population estimate provided here should be a useful benchmark for tracking future population trends.

Keywords: abundance, *Egretta rufescens*, Florida, monitoring, population status, Reddish Egret

The Reddish Egret (*Egretta rufescens*) is North America's rarest heron. Distributed along the coasts of the Gulf of Mexico from Florida to Belize, throughout the West Indies, and near Baja California on Mexico's west coast, it has an an estimated global population of just 5,000-7,000 individuals (Green 2006). A coastal specialist that depends on shallow flats for foraging, the species was probably always relatively rare but was nearly extirpated from the United States by plume hunters in the early 1900s (Lowther and Paul 2002). In Florida, the species disappeared entirely sometime around 1908, then reappeared in Florida Bay in 1937 (Powell et al. 1989). The population then grew steadily until 1978, when researchers estimated that the Florida Bay population comprised 200-250 breeding adults (Powell et al. 1989). Nesting birds were discovered north of Florida Bay in the mid-1970s, and the population on Florida's southwest coast grew until at least 2004, when 98 nesting pairs were found in the Tampa Bay area (Hodgson and Paul 2011). The species now breeds in Florida Bay, the lower Florida Keys (Wilmers and Arnett 2004, Hill and Green 2011), in southwest Florida, from Cape Sable north to Cedar Key (Hodgson and Paul 2011, Cook 2014), and on the east coast, primarily on and near the Merritt Island National Wildlife Refuge (NWR), though isolated breeding records have been confirmed elsewhere as well (e.g., Rodgers and Schwikert 1986).

Reddish Egret nests have been monitored annually by boat and ground-based surveys in Tampa Bay for >30 years (Hodgson and Paul 2011), and monitoring began more recently in southwest Florida (Cook 2014). Monitoring has been less consistent elsewhere in the state, in part because the species' dark plumage and subcanopy nesting location make it extremely difficult to detect on aerial surveys (Rodgers et al. 2005). As such, an estimate of statewide population size that includes a measure of uncertainty has not been produced, and it is unknown whether there are large, stable colonies not currently being monitored or managed. Recent monitoring by Audubon Florida in Tampa Bay and Florida Bay suggests that both populations may now be declining (Lorenz and Paul, unpublished data), likely because of altered hydrology that reduces the quality of foraging habitat (e.g., Lorenz 2014a), human disturbance at nesting colonies (Hodgson and Paul 2011), and other anthropogenic factors such as continued coastal development and sea level rise.

The Florida Fish and Wildlife Conservation Commission (FWC) determined that the Reddish Egret met the criteria for listing as State Threatened (FWC 2016) because of its small population size, recent local declines, and restricted distribution (FWC 2013). The State also finalized a Species Action Plan for the Reddish Egret and other wading birds that called for the identification and monitoring of the most important breeding colonies across the state. We implemented a statewide survey of Reddish Egrets during the 2016 breeding season using a standardized protocol to provide a baseline population estimate for future population monitoring and to identify the largest breeding colonies to inform the prioritization of management activities in Florida.

Methods

Data collection.—We searched for breeding Reddish Egrets from November 2015 through June 2016 throughout coastal Florida. The earliest surveys were done in Florida Bay and the lower Florida Keys, where the breeding season starts earlier and extends longer than elsewhere in the state (Lowther and Paul 2002). The extent of Florida's coastline (~2,200 km), the logistical challenges associated with surveying coastal islands (e.g., weather, tides, cost), and the sparse, clumped distribution of Reddish Egrets precluded a stratified and/or randomized survey design. Instead, we focused our efforts on known colonial wading bird nesting sites with current or historical records of breeding Reddish Egrets, as well as places where suitable Reddish Egret nesting and foraging habitat occurred in proximity to each other. Sites included natural and dredge-spoil islands in estuarine, marine, and freshwater systems that were typically dominated by red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), and Brazilian pepper (*Schinus terebinthifolius*). Sites occurred primarily in each of four distinct core nesting areas: lower Florida Keys, Florida Bay, Merritt Island NWR, and Pinellas County south to Marco Island (hereafter, Southwest Florida; Fig. 1). Large stretches of Florida's coast have few or no recently documented records of nesting Reddish Egrets (e.g., the eastern Panhandle and Big Bend south to Cedar Key, Jacksonville south to Merritt Island, and Merritt Island south to Biscayne Bay), but to ensure that we were not missing breeding birds we worked with land managers, NGO staff, and other local experts to identify potential survey sites. We recognized that large mixed-species colonies of wading birds existed in the coastal habitats of Everglades National Park between Cape Sable (Florida Bay) and Marco Island that likely include Reddish Egret nesting. But these colonies are inaccessible by boat and are surveyed only from the air, precluding, as mentioned, documentation of Reddish Egret nesting numbers. Therefore, this area was not included in our estimates. We also reviewed records on eBird (ebird.org) for locations of adult birds during the breeding season and surveyed nearby potential breeding sites.

We developed the statewide survey framework for monitoring Reddish Egrets based on Cox et al. (2017). There we recommended that the survey method used at a particular site be chosen based on a site-prioritization process as well as more fundamental logistical constraints. The prioritization process arose from our effort to balance the trade-off between sampling extent (i.e., we wanted to visit undersampled sites and make sure we could identify range expansions and contractions) and intensity of effort (we wanted to sample a subset of sites twice so we could estimate variances). We prioritized sites using the following criteria: high, a site with high relative abundance and/or consistent

occupancy across recent years; medium, a site with infrequent or historical rather than recent nest records; and low, a site outside a core nesting area or with suspected low-quality nesting and/or nearby foraging habitat (i.e., few or no shallow flats; Lowther and Paul 2002) where nesting birds had not been previously documented. We surveyed high- and medium-priority sites at least twice within a short time period (i.e., usually within a week) when possible to allow for estimation of count variances. Low-priority sites were surveyed opportunistically and were rarely surveyed twice.

We could not adopt one survey protocol that suited all sites regardless of their prioritization rating because colonies occurred on properties owned and managed by federal, state, local, and private entities that allowed various degrees of access. In addition, nesting birds occupied habitat of varying structure (e.g., canopy height, vegetation density) on islands of variable size, and in some cases entry into a colony on foot would have caused undue disturbance to nesting birds. We therefore relied on two primary survey protocols for high- and medium-priority sites: direct counts (i.e., counts performed by walking into a colony or by slowly circling a small colony from a boat ~30 m offshore) and flight-line surveys (in which two to four observers station themselves on opposite sides of a site approximately 100 m from a colony and recorded all incoming and outgoing Reddish Egret flights for 2 h starting 1 h after sunrise). Most sites were surveyed twice within a week to estimate count variance. Detailed descriptions and assessments of direct counts and flight-line surveys may be found in Cox et al. (2017).

Unlike other sites, those in Florida Bay were usually surveyed >2 times over the course of the breeding season because we performed our surveys concurrent with a long-term Roseate Spoonbill (*Platalea ajaja*) monitoring program with repeated colony visits. The protocol for the Florida Bay sites is outlined in detail in Lorenz (2014b), but, briefly, we visited current and historic Roseate Spoonbill and Reddish Egret nesting colonies a minimum of three times per season, with early-season visits made every three weeks for sites known to have had nesting activity during the previous five years. We marked each active nest with a uniquely numbered 16- × 8-cm waterproof colored (red or blue) card attached with a spring-loaded clip to a tree near the nest, and revisited active colonies every 7-10 days until all nests failed or chicks became branchlings. Color tags have been used to mark nests in Florida Bay for >30 years and no evidence to date suggests that individual predators or predator populations have associated the tags with nests (J. Lorenz, pers. obs).

We adopted an unstandardized approach for surveying low-priority sites that allowed us to cover substantial ground in a relatively short time, survey at any time of day, and take advantage of the efforts of other research and monitoring groups in the state. These survey efforts were made in areas with confirmed but older nesting records, areas with verified records in public databases (e.g, eBird sightings) of the presence but not documented nesting of Reddish Egrets, and at sites proximate to adult Reddish Egrets whose flight lines suggested they were nesting. We included these surveys in our overall data set if the surveyor was confident that the survey was reliable. Some unstandardized surveys were performed via a slow, close pass in a kayak or outboard motor boat. In others, one person visited an island to search for nesting birds while a second watched the canopy for perching Reddish Egrets. In some cases we performed a 1- to 2-h flight-line survey in late morning or early afternoon to look for nesting birds. We returned to a site when possible to perform a standardized survey if we suspected or had confirmed that Reddish Egrets were breeding there.

Analysis.—For each site, one of four count types was used: 1) direct count, performed once or twice within a short time period (i.e., usually within a week); 2) flight-line survey, performed once or twice within a similarly short time period; 3) low-priority-site survey, performed once; and 4) direct count, repeated throughout the breeding season (Florida Bay), resulting in peak and total nest counts for each site rather than a snapshot estimate. We limited estimation of detection rates to sites with one or two direct

counts because the other data types were either amenable to estimating variances but not detectability or, as in the low-priority-site surveys, were not designed to estimate variances. Furthermore, we used detection rates to correct the raw counts only for those sites at which direct counts revealed nesting reddish egrets. This approach assumes that all zero counts were true zeros, which may be untrue to some extent. However, many of the sites had nesting wading birds but were clearly unsuitable for reddish egrets (e.g., limited vegetation that lacked their preferred understory). Furthermore, some sites did not appear to have any nesting wading birds, and a retrospective review of our data showed that reddish egrets rarely nested in the absence of other species (n=1 site). As such, applying corrections for detectability to the many sites where reddish egrets were not detected would have resulted in a gross overestimate of the state's Reddish Egret population size.

We estimated detection rates for the sites with direct counts using the double-observer model via generalized multinomial N-mixtures (Nichols et al. 2000, Royle 2004) with the *gmultmix* function from the *unmarked* library (Fiske and Chandler 2011) for the R statistical environment (R Core Team 2016). Data frames were first assembled with the *unmarkedFrameGMM* unmarked function with type = double and numPrimary = 1, hence availability was not estimated. Default limits of integration (K = max observed count + 100) were assumed, and the stability of model results against larger K (500) was confirmed. Four models were compared that differed only in the conditional distributions (Poisson or negative binomial) and in whether detection probability was assumed to be constant or region-specific (southwest Florida vs. Florida Keys), because we had different crews and general site characteristics in each region. Latent abundance (i.e., inferred abundance including individuals not detected) was assumed to be constant. We assessed goodness of fit by unmarked's *parboot* parametric bootstrap function of the sum of squared errors from the best model, with 250 simulations (Fiske and Chandler 2011). Confidence intervals for abundance and detection probability point estimates from the best double-observer model were obtained by parametric bootstrap with 1,000 simulations.

To obtain a population-size point estimate from the four data types, we summed the following: the point estimate from the best double-observer model for the direct count data, the mean value flight-line count from sites that received two surveys, the mean value of the peak and maximum counts from Florida Bay, and the counts from low-priority sites or sites that received a single flight-line survey. We then used a parametric bootstrapping to obtain a confidence interval around the resulting population size. One thousand parametric bootstrap simulations of the best double-observer model from the direct counts were performed to estimate the sum of the mean best unbiased predictors (unmarked function *bup*) of the posterior empirical Bayes estimates (unmarked function *ranef*) of latent site abundances. For each simulated total from double-observer models, the numbers of nests estimated by flight-line, low-priority surveys, and Florida Bay were added. For Florida Bay sites and for sites assessed by flight-line surveys where two estimates were made, one from each pair of site counts was excluded by 50-50 chance for each simulation, so that the uncertainty implied by differences in pairs of counts at each site was included in the uncertainty estimate for the grand estimated sum.

Results

We surveyed 305 sites throughout Florida for nesting Reddish Egrets (Fig. 1). Twelve sites were surveyed via flight-line survey, 9 (75%) of which were surveyed twice. One hundred thirty-three sites were surveyed via direct count, 28 (21%) of which were surveyed twice. Fifty-six sites were surveyed in Florida Bay, and

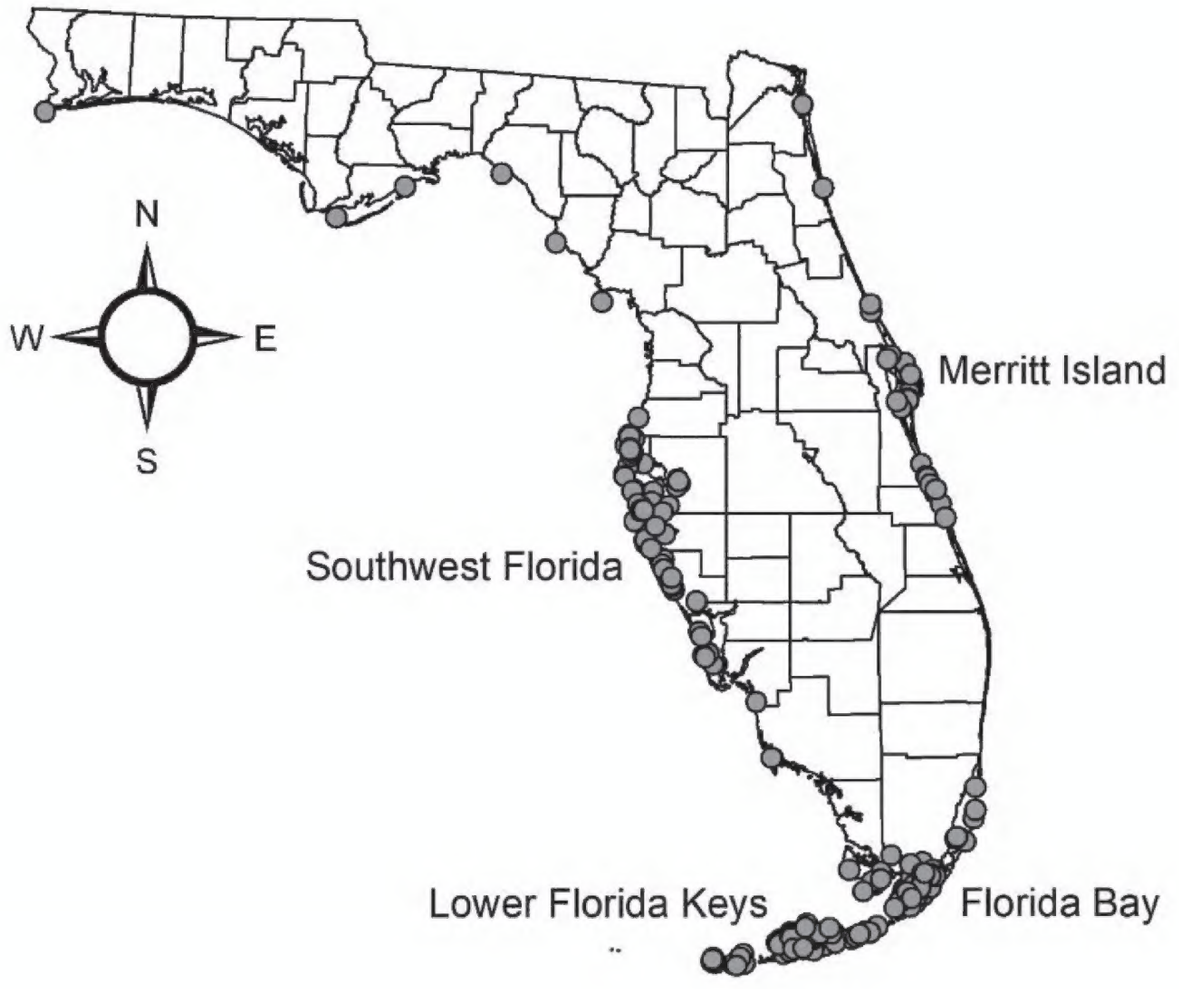

Figure 1. Locations of the 305 sites surveyed for nesting Reddish Egrets during the 2016 breeding season.

104 sites were surveyed by our team and external partners using unstandardized methods. Fifty-eight of the 305 sites (19%) had at least one nesting pair of Reddish Egrets (Table 1). Before accounting for detectability, 262-312 pairs were detected overall, with the range of values reflecting variability from sites that were surveyed twice via flight-line counts and from peak versus total nest counts from Florida Bay. The two largest colonies each had 23 pairs of nesting birds, but 29 sites (50%) had three or fewer pairs. Birds were fairly evenly distributed across the core nesting areas, with 78–86 pairs in southwest Florida, 54-88 pairs in Florida Bay, 95 pairs in the lower Florida Keys, and 34-43 pairs in or near Merritt Island National Wildlife Refuge (Fig. 2). No nesting birds were observed north of Merritt Island on the Atlantic coast or north of Cedar Key on the Gulf coast.

The best of the four double-observer models was one assuming a negative binomial conditional distribution and region-specific detection probabilities. The Akaike information criterion weight for this model

Table 1. Maximum number of nesting pairs (not corrected for detectability) and managing entities for sites with nesting Reddish Egrets during the 2016 breeding season. Table is sorted by Florida Fish and Wildlife Conservation Commission Management Region.

FWC Region	Site	Latitude	Longitude	Max. # of Pairs	Managing entities
North central	Snake Key	29.0964	–83.0309	2	Cedar Keys National Wildlife Refuge
Northeast	Mullethead Island	28.7262	–80.7701	23	Merritt Island National Wildlfe Refuge
	Banana North #1	28.5146	–80.6062	12	Merritt Island National Wildlfe Refuge
	Banana South #4	28.4875	–80.6209	4	Merritt Island National Wildlfe Refuge
	Tank Island	28.7031	–80.7979	3	Merritt Island National Wildlfe Refuge
	Big Island	28.6089	–80.6601	1	Merritt Island National Wildlfe Refuge
South	Little Saddlebunch #5	24.6045	–81.6210	23	The Nature Conservancy/Great White Heron National Wildlfe Refuge[a]
	Brews Key	25.0437	–80.7122	20	Everglades National Park
	Duck Key	25.1801	–80.4894	14	Everglades National Park
	Palm Key	25.1173	–80.8809	13	Everglades National Park
	Marco ABCs “B” middle	25.9566	–81.7040	10	Rookery Bay National Estuarine Research Reserve
	Picnic Key Mangrove SE	24.6336	–81.3931	9	Privately owned[b]
	Water Key Mangrove (cluster) 3	24.7469	–81.3458	9	Great White Heron National Wildlife Refuge[a]
	Arsenicker Key	25.3966	–80.2866	9	Biscayne Bay National Park
	Sandy Key	25.0347	–81.0140	9	Everglades National Park
	Central Jimmie	25.0493	–80.6471	8	Everglades National Park
	Upper Sugarloaf Sound	24.6426	–81.5460	7	Great White Heron National Wildlife Refuge[a]
	Coupon Bite Mangrove	24.6556	–81.3473	6	National Key Deer Refuge[a]
	Cudjoe Key Mangrove	24.6986	–81.4961	5	Great White Heron National Wildlife Refuge[a]

[a]Ownership not defined, so most geographically proximate managing entities are listed.
[b]Landowner information available at qPublic.net for Monroe County.
[c]Landowner information available at hcpafl.org for Hillsborough County.

Table 1. (Continued) Maximum number of nesting pairs (not corrected for detectability) and managing entities for sites with nesting Reddish Egrets during the 2016 breeding season. Table is sorted by Florida Fish and Wildlife Conservation Commission Management Region.

FWC Region	Site	Latitude	Longitude	Max. # of Pairs	Managing entities
North central	Snake Key	29.0964	–83.0309	2	Cedar Keys National Wildlife Refuge
	Pine Channel Mangrove SE	24.7072	–81.3977	5	National Key Deer Refuge[a]
	Green Heron Mangroves	24.7317	–81.5073	5	Great White Heron National Wildlife Refuge[a]
	Stake Key	25.0594	–80.5861	5	Everglades National Park
	Marco ABCs "A" west	25.9580	–81.7059	4	Rookery Bay National Estuarine Research Reserve
	Niles Channel Mangrove	24.7114	–81.4472	4	National Key Deer Refuge[a]
	Happy Jack	24.6857	–81.5686	3	Great White Heron National Wildlife Refuge/Monroe County[a]
	Howell Key Mangrove	24.6699	–81.4296	3	National Key Deer Refuge/Monroe County[a]
	Little Money Key	24.6855	–81.2267	3	Privately owned[b]
	Lil 1st Mate	25.0268	–80.6469	3	Everglades National Park
	Eagle Key	25.1680	–80.5963	3	Everglades National Park
	Marco ABCs "C" east	25.9555	–81.7012	2	Rookery Bay National Estuarine Research Reserve
	Boca Grande	24.5368	–82.0052	2	Key West National Wildlife Refuge
	Lower Sugarloaf Sound	24.6243	–81.5723	2	Florida Keys Wildlife and Environmental Area[a]
	Torch Key Mangrove N	24.7413	–81.4702	2	Great White Heron National Wildlife Refuge[a]
	Torch Key Mangrove SW	24.7332	–81.4730	2	Great White Heron National Wildlife Refuge[a]
	Budd NW	24.7211	–81.5122	1	Great White Heron National Wildlife Refuge[a]
	Johnston Key Mangroves SE mini	24.7097	–81.5785	1	Great White Heron National Wildlife Refuge[a]
	Galdin 3	24.7005	–81.5955	1	Great White Heron National Wildlife Refuge[a]
	Happy Jack Kiss	24.6854	–81.5758	1	Great White Heron National Wildlife Refuge[a]

[a]Ownership not defined, so most geographically proximate managing entities are listed.
[b]Landowner information available at qPublic.net for Monroe County.
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Table 1. (Continued) Maximum number of nesting pairs (not corrected for detectability) and managing entities for sites with nesting Reddish Egrets during the 2016 breeding season. Table is sorted by Florida Fish and Wildlife Conservation Commission Management Region.

FWC Region	Site	Latitude	Longitude	Max. # of Pairs	Managing entities
North central	Snake Key	29.0964	–83.0309	2	Cedar Keys National Wildlife Refuge
	Crane Key (Lower Keys)	24.7546	–81.5132	1	Great White Heron National Wildlife Refuge[a]
	Mangrove Key	25.3945	–80.3160	1	Biscayne Bay National Park
	Central Bob Allen Key	25.0319	–80.6784	1	Everglades National Park
	North Nest Key	25.1501	–80.5092	1	Everglades National Park
	Porjoe Key	25.1378	–80.4730	1	Everglades National Park
Southwest	White Pelican Island	26.7905	–82.2463	11	Navigational district, Audubon
	Useppa Broken Island North	26.6755	–82.1942	10	Florida
	Three Rooker Bar State Park	28.1106	–82.8370	9	Florida
	Richard T. Paul Alafia Bank	27.8470	–82.4176	7	Mosaic Fertilizer LCC, Port Tampa Bay, Audubon
	Cortez Key Bird Sanctuary	27.4622	–82.6828	5	Audubon
	Roberts Bay Bird Islands	27.2946	–82.5445	5	Florida, Audubon
	Clearwater Harbor I-25 Bird Island	27.9660	–82.8147	5	City of Clearwater, Audubon
	Coffeepot Bayou	27.7915	–82.6241	4	Bird Island Trust
	Manbirtee Key	27.6359	–82.5740	2	Port Manatee, Audubon
	Bonita Bay North Island	26.3431	–81.8239	2	Bonita Bay Home Owner's Association
	Alligator Lake Bird Island	27.9811	–82.6989	2	City of Safety Harbor
	Lost River	27.6916	–82.4977	2	Privately owned[c]
	St. Joseph Sound Marker 26	28.0755	–82.7999	2	Florida, Pinellas Aquatic Preserve, Audubon
	Belleair Beach	27.9132	–82.8422	1	Town of Belleair Beach
	Miguel Bay	27.5710	–82.5993	1	Florida, Terra Ceia Aquatic Preserve, Audubon

[a]Ownership not defined, so most geographically proximate managing entities are listed.
[b]Landowner information available at qPublic.net for Monroe County.
[c]Landowner information available at hcpafl.org for Hillsborough County.

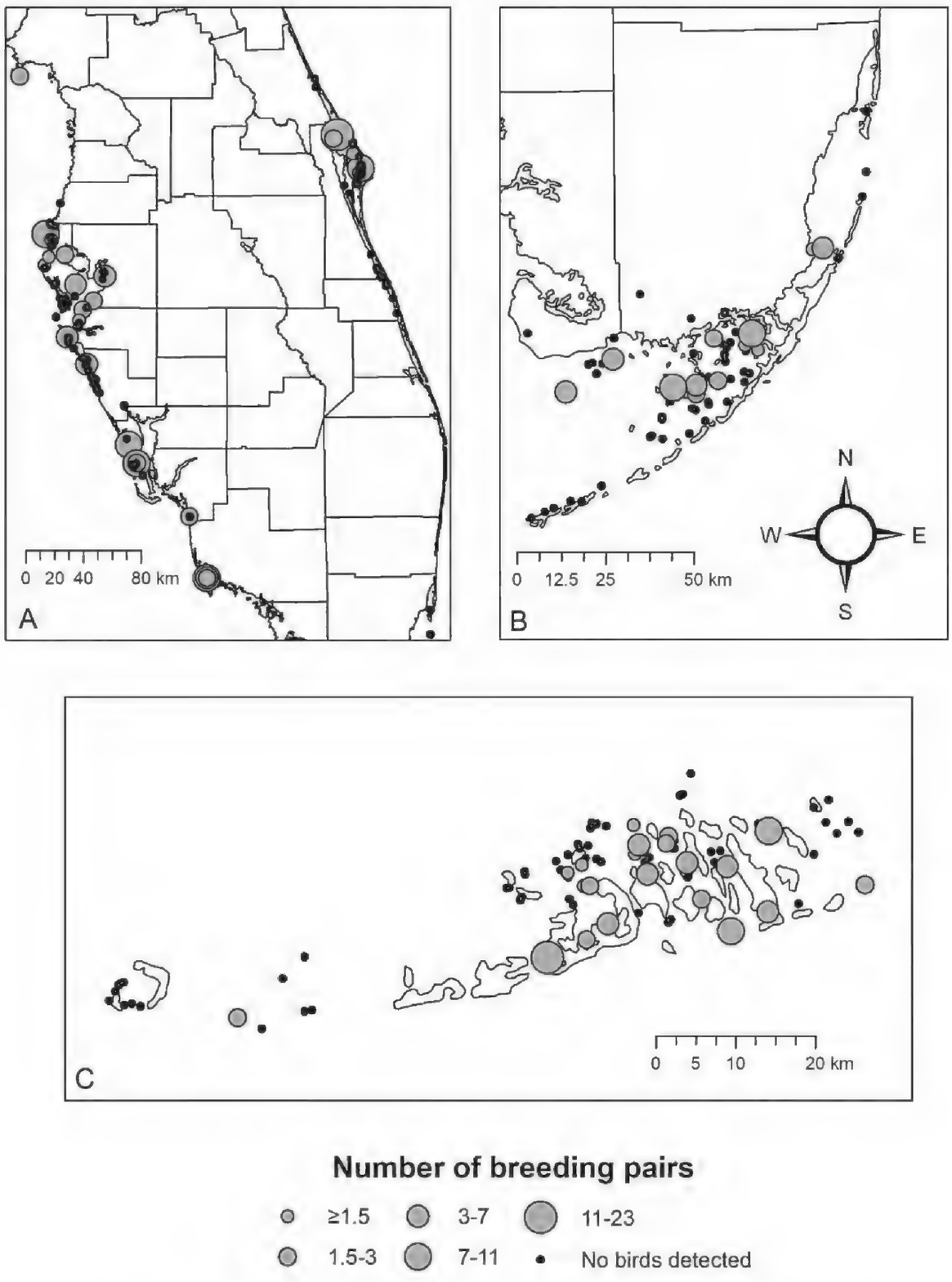

Figure 2. Locations and counts of nesting Reddish Egrets during the 2016 breeding season in (A) southwest Florida and Merritt Island NWR, (B) Florida Bay, and (C) the lower Florida Keys.

was 0.99, and goodness of fit was excellent (p = 0.59). After back-transformation, latent abundance was estimated to be 10.54 (95% CI: 7.26-14.82) for the sites counted by double-observer protocol, and

p(detection) = 0.77 (0.70–0.82) for the Florida Keys sites and 0.47 (0.27-0.61) for the southwest Florida sites. The bootstrapped point estimate of the sum for all sites was 480 (95% CI: 375-606).

Discussion

The subcanopy nesting location, the variability in nesting habitats and site-access permissions, and the extent of nesting habitat make the Reddish Egret an especially challenging bird to survey. The snapshot nature of our survey (i.e., sites outside of Florida Bay were often visited during just one week of the breeding season) likely missed birds that nested outside our survey window, and our effort cannot be considered truly comprehensive because it was simply not possible to visit all the nesting habitat along Florida's ~2,200 km of coastline. In particular, we failed to survey the region in southwest Florida between Cape Sable in Marco Island, where large mixed colonies exist that probably include Reddish Egrets but are inaccessible because they are so remote. Nevertheless, our approach, which prioritized sites based on known Reddish Egret occupancy and allowed for different count types performed by biologists from numerous organizations, produced a statewide estimate of nesting Reddish Egrets that incorporated detectability and other count variances to the extent possible and that was consistent with prior knowledge about the status of the species in Florida.

Our population estimate of 480 breeding pairs is greater than the last published estimate of 250-300 pairs (Green 2006), which was considered a best guess because of spatial and/or temporal gaps in survey coverage. It is also greater than a 1990 estimate of 400 pairs at 40 sites (R. T. Paul, as reported in Robertson and Woolfenden 1992). Qualitatively, however, we note that our raw count (262-312 pairs) is substantially lower than that reported in Robertson and Woolfenden (1992), that the number of pairs (100-125) estimated by Powell et al. (1989) in Florida Bay in 1977-1979 is greater than our estimate of 54-88 pairs. In addition, although we found birds nesting on five sites not documented by Powell et al. (1989), only six of 18 (33%) nesting sites active in 1977-1979 were still active in 2015-2016. Furthermore, our raw counts for Tampa Bay and southwest Florida in 2016 are substantially lower than those from the early 2000s (Hodgson and Paul 2011). Taken together, these facts suggest that regular monitoring of nesting Reddish Egrets is warranted until we can determine a statewide population trend with confidence. It will also allow managers to track regional populations to identify emergent issues within any of the core nesting areas.

Our survey effort was limited north of Cedar Key on the Gulf coast and north of Merritt Island on the Atlantic coast because eBird records and communications with land managers and other partners indicated

that few, if any, adult Reddish Egrets are found there during the breeding season. It is not entirely clear why that is so. Active colonies of wading birds exist in those areas, and, although Reddish Egrets require a specific foraging habitat (Lowther and Paul 2002, Bates et al. 2016), the presence of juveniles in northeast Florida and the Panhandle during the breeding season (W. A. Cox, unpublished data) and of adults in the Big Bend during the winter (W. A. Cox, pers. obs.) suggests that foraging habitat is available in some of those areas. It may be that prey availability is sufficient for self-maintenance but insufficient to raise young. Alternatively, nesting habitat may be a limiting factor, at least on the Big Bend and Panhandle coasts. Nevertheless, further northward expansion may be just a matter of time, as the species has moved steadily northward in Florida since recovering from extirpation in the early 1900s, only recently began breeding in the Cedar Keys National Wildlife Refuge (the northernmost location on Florida's Gulf coast), and has nested as far north on the Atlantic coast as South Carolina (Ferguson 2005). Any observed northward shift and/or range extension may be in response to climate change, as has been observed or projected for numerous other bird species (Zuckerberg et al. 2009, Wu et al. 2018). Regular monitoring of Reddish Egrets should allow for early detection of changes in the distribution of the species and provide an opportunity for climate resilient conservation planning and management. The degree to which climate change and concomitant sea-level rise will disrupt linkages between Reddish Egret foraging and breeding habitat is an open question that may also be informed by monitoring efforts.

Continued monitoring of Reddish Egret nesting sites across Florida will identify high priority breeding sites and is a necessary precursor to implementation of management actions that will benefit the species. For example, the substantial number of nesting birds in Florida Bay further reinforces the need to restore historical freshwater inputs from the Everglades to historic salinity levels to restore prey bases for nesting wading birds (Lorenz 2014a). Protecting colony sites in waterways popular with recreational boaters and fishermen by posting the perimeter of the colony and/or including a no-entry buffer area should prove beneficial as nesting Reddish Egrets appear to be particularly sensitive to disturbance by humans (A. Paul, pers. obs.). Finally, numerous sites in Tampa Bay that were historically occupied by Reddish Egrets and other wading birds have been abandoned in recent years because of the presence of predators such as raccoons (*Procyon lotor*). Targeted predator removal prior to the breeding seasons at these sites and additional active colonies may be warranted and should benefit Reddish Egrets. Reddish Egrets tend to be found in greater abundance in large colonies with greater species diversities (Cox et al. 2019), so management at the most important Reddish Egret colonies will also benefit numerous other wading birds.

Acknowledgments

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Literature Cited

Bates, E. M., L. M. Koczur, A. Krainyk, B. M. Ballard, and A. C. Kasner. 2016. Spatial and temporal dynamics of foraging habitat availability for Reddish Egrets in the Laguna Madre, Texas. International Journal of Biodiversity and Conservation 8:251-258.

Cook, M. I. 2014. South Florida Wading Bird Report. South Florida Water Management District, West Palm Beach.

Cox, W. A., A. Schwarzer, R. Kiltie, A. Paul, M. Rachal, G. M. Kent, K. D. Meyer, J. J. Lorenz, P. E. Frezza, H. Rafferty, and S. Roebling. 2017. Development of a survey protocol for monitoring Reddish Egrets (*Egretta rufescens*) in Florida, USA. Waterbirds 40:334-343.

Cox, W. A., B. Bankovich, K. Malachowski, A. C. Schwarzer, A. Paul, M. Rachal, J. J. Lorenz, K. D. Meyer, and G. M. Kent. 2019. Nest site selection by Reddish Egrets in Florida. Journal of Wildlife Management. 83:184-191.

Ferguson, L. M., P. G. Jodice, W. Post, and F. I. Sanders. 2005. Reddish Egret extends its breeding range along the North American Atlantic coast into South Carolina. Waterbirds 28:525-526.

Fiske, I., and R. B. Chandler. (2011). unmarked: An R package for fitting hierarchical models of wildlife occurrence and abundance. Journal of Statistical Software 43:1-23.

FWC [Florida Fish and Wildlife Conservation Commission]. 2013. A Species Action Plan for Six Imperiled Wading Birds: Little Blue Heron, Reddish Egret, Roseate Spoonbill, Snowy Egret, Tricolored Heron, and White Ibis. Tallahassee.

FWC [Florida Fish and Wildlife Conservation Commission]. 2016. Florida's Imperiled Species Management Plan. Tallahassee.

Green, M. C. 2006. Status Report and Survey Recommendations on the Reddish Egret (*Egretta rufescens*). U.S. Fish and Wildlife Service, Atlanta, Georgia.

Hill, A., and C. Green. (2011). Reddish Egret (*Egretta rufescens*) in the lower Florida Keys. Journal of Heron Conservation 1:2-5.

Hodgson, A. B., and A. F. Paul. 2011. The Status of Reddish Egrets in Tampa Bay, Florida, USA 1974-2008. Audubon of Florida Coastal Islands Sanctuaries, Tampa. Challenge Cost Share Agreement #401818G564, Migratory Bird Program, U.S. Fish and Wildlife Service, Atlanta, Georgia.

Lorenz, J. J. 2014a. A review of the effects of altered hydrology and salinity on vertebrate fauna and their habitats in northeastern Florida Bay. Wetlands 34:189-200.

Lorenz, J. J. 2014b. The relationship between water level, prey availability and reproductive success of Roseate Spoonbills foraging in a seasonally flooded wetland while nesting in Florida Bay. Wetlands 34:201-211.

Lowther, P. E., and R. T. Paul. 2002. Reddish Egret (*Egretta rufescens*). The Birds of North America Online (A. Poole, Editor). Cornell Lab of Ornithology, Ithaca, New York. <https://doi.org/10.2173/bna.633>.

Nichols, J. D., J. E. Hines, J. R. Sauer, F. W. Fallon, J. E. Fallon, and P. J. Heglund. 2000. A double-observer approach for estimating detection probability and abundance from point counts. Auk 117:393-408.

Powell, G. V. N., R. D. Bjork, J. C. Ogden, R. T. Paul, A. H. Powell, and W. B. Robertson. 1989. Population trends in some Florida Bay wading birds. Wilson Bulletin 101:436-457.

R Core Team. 2016. R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing, Vienna.

Robertson, W. B., Jr., and G. Woolfenden. 1992. Florida Bird Species: An Annotated List. Florida Ornithological Society Special Publication No. 6, Gainesville.

Rodgers, J. A., Jr., P. S. Kubilis, and S. A. Nesbitt. 2005. Accuracy of aerial surveys of waterbird colonies. Waterbirds 28:230-237.

Rodgers, J. A., Jr., and S. T. Schwikert. 1986. Recolonization of Pelican Island by Reddish Egrets. Florida Field Naturalist 14:76-77.

Royle, J. A. 2004. Generalized estimators of avian abundance from count survey data. Animal Biodiversity and Conservation 27:375-386.

Wilmers, T., and J. Arnett. 2004. A Survey of Reddish Egrets in the Lower Florida Keys. Florida Keys National Wildlife Refuges, Big Pine Key, Florida.

Wu, J. X., C. B. Wilsey, L. Taylor, and G. W. Schuurman. 2018. Projected avifaunal responses to climate change across the U.S. National Park system. PLoS ONE 13:e0190557.

Zuckerberg, B., A. M. Woods, and W. F. Porter. 2009. Poleward shifts in breeding bird distributions in New York State. Global Change Biology 15:1866-1883.

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WHITE-FACED WHISTLING-DUCKS (*Dendrocygna viduata*) CAPTURED, COLOR-MARKED, AND RELEASED IN BROWARD COUNTY, FLORIDA

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There have been multiple reports of White-faced Whistling-Ducks (*Dendrocygna viduata*) in Florida since the first in 1991 (Sullivan et al. 2009, Greenlaw et al. 2014, EDDMapS 2018). The sighted birds were most likely released or escaped from captivity, but some may have possibly been natural vagrants (Greenlaw et al. 2014). In November 2015, we learned of a flock of six White-faced Whistling-Ducks in Davie, Broward County, Florida (Fig. 1). In June 2016, we captured,

Figure 1. Flock of six White-faced Whistling-Ducks at the capture site prior to any capture attempts. Photographed by Ron Smith.

color-marked, and released two members of this flock (Fig. 2). Here we summarize reports of White-faced Whistling-Ducks in Florida and provide specifics about the capture effort and associated encounters with the two color-marked individuals.

The range of White-faced Whistling-Ducks is from Costa Rica to northern Argentina and Uruguay, including Trinidad, and sub-Saharan Africa, including Madagascar and Comoro Island (del Hoyo et al. 1992, Dickinson et al. 2004). White-faced Whistling-Ducks were listed by Robertson and Woolfenden (1992) as "unestablished exotics" in Florida, with only one report. Greenlaw et al. (2014) list the species as "verifiable, potential natural vagrants" and include 10 reports (five

Figure 2. Color marking an after-hatch-year female with marker "Y3". Photographed by Richard Hermann.

records). Most reports of White-faced Whistling-Ducks in Florida have been of one or two individuals (Fig. 3; Sullivan et al. 2009, Greenlaw et al. 2014, EDDMapS 2018).

Across their natural range, White-faced Whistling-Ducks use a variety of wetland types but are most commonly found at freshwater ponds and emergent wetlands (del Hoyo et al. 1992), both of which are abundant in southern Florida. Most sightings of White-faced Whistling-Ducks in Florida have been from suburban areas, but individuals have also been seen at more natural areas such as Circle B Bar Reserve in Polk County and Stormwater Treatment Area 5 in Hendry County. Other exotic waterfowl in Florida such as Muscovy Ducks (Greenlaw 2014), and Egyptian Geese (Braun 2004, Pranty and Ponzo 2014) have

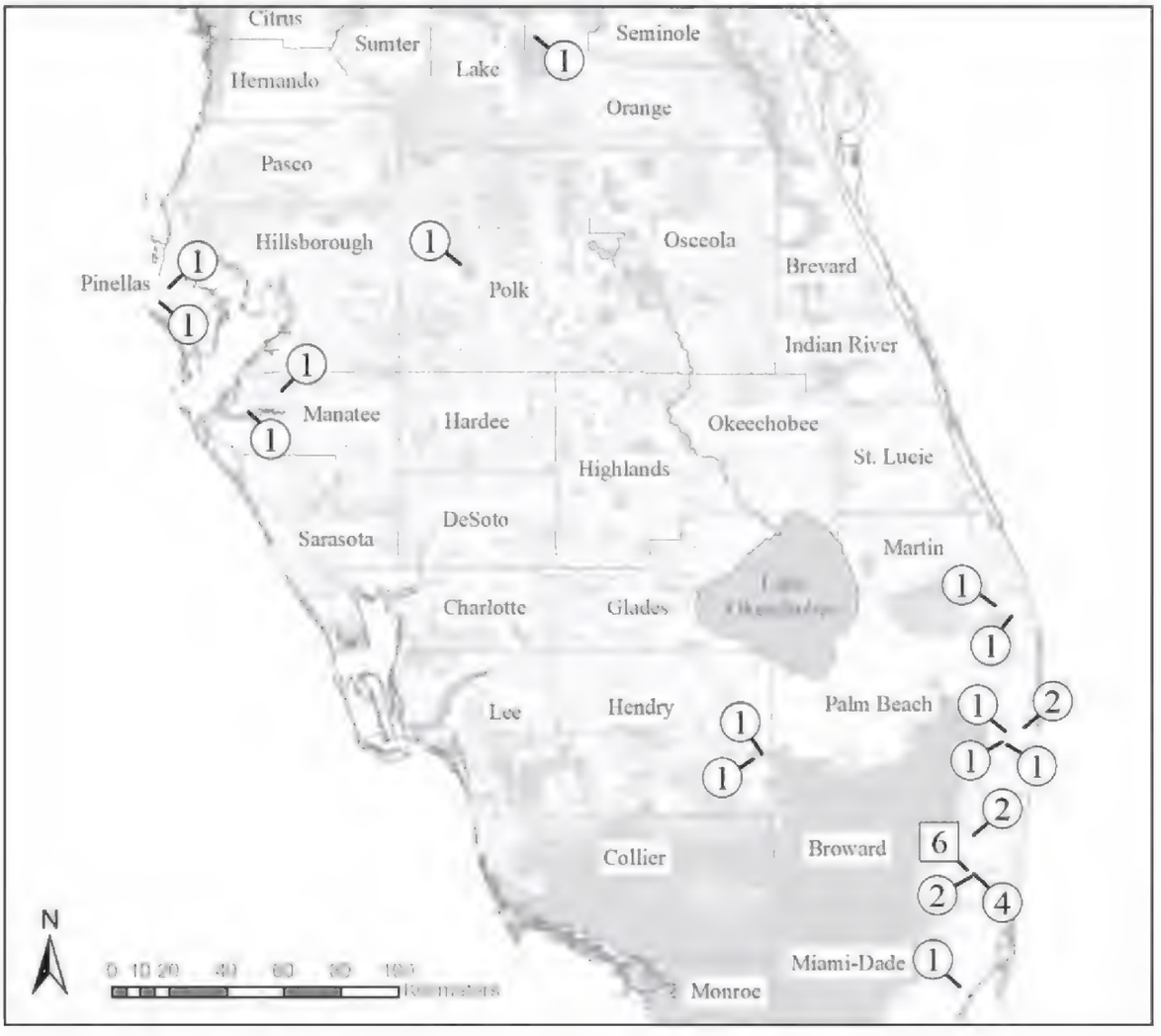

Figure 3. Map of sightings of White-faced Whistling-Ducks in Florida. Numbers inside symbols represent the maximum number of individuals reported at that location in any given report. Multiple reports at the same location from different reporters or dates were consolidated for legibility. The square symbol distinguishes sightings at the banding location. Shaded areas represent National Wetland Inventory polygons.

occasionally been observed away from suburban water bodies, but seem unable to survive long-term away from human habitation.

White-faced Whistling-Ducks have several life-history traits that may make them successful invaders of southern Florida, including long-distance dispersal capabilities (Petrie and Rogers 1997), adaptable diet and feeding behavior (Petrie 2000, 2005), and use of similar habitats in their native range. Their congeners, Fulvous Whistling Ducks (*D. bicolor*) and Black-bellied Whistling-Ducks (*D. autumnalis*), increased in both population sizes and ranges in Florida starting in the 1960s and 1980s, respectively (Greenlaw et al. 2014). In addition to biological differences among the three species, a key difference is that those population changes in Florida originated from relatively close historic ranges where additional emigration could bolster the stock in the area of expansion, whereas White-faced Whistling-Ducks in Florida are few in number and relatively farther from their native range.

In November 2015, we learned of a flock of six White-faced Whistling-Ducks photographed on a suburban retention pond in Davie, Broward County, Florida. Our attempts to capture individuals from this flock via cast net and mist net were unsuccessful. On 14 June 2016, we captured two individuals from this flock using a pneumatic-powered net cannon (Wildlife Control Supplies Net Blaster SP-10500) and sexed them via cloacal examination. One duck was an after-hatch-year (AHY) male and the other was an AHY female. We attached one alpha-numeric color band (Spinner Plastics, Inc.) to each leg of these individuals: white "W7" on red markers on the male and white "Y3" on green markers on the female. Neither bird was pinioned, toe-clipped, or otherwise previously marked. The U.S. Geological Survey Bird Banding Lab (BBL) does not regulate the marking of exotic birds, so BBL aluminum bands were not placed on the ducks. We used markers with an inside diameter similar to a size 7 band (12.7 mm), based on recommendations for Black-bellied Whistling-Ducks, which call for sizes 7 or 7a (11.13 mm). We recommend using size 7a markers in the future because the size 7 marker slid above the ankle of one of the individuals post-release. Several underwing feathers were collected from each individual, dried, and stored at Southern Illinois University's Cooperative Wildlife Research Laboratory; they will be made available should any researchers seek to examine genetic relationships between other White-faced Whistling-Ducks captured in the future and the birds captured for this study.

One unmarked White-faced Whistling-Duck from the Davie flock disappeared in 2016 and another was later found dead on a road (R. Hermann in litt.), leaving four individuals, including the two that we color-marked. Four individuals have since been photographed at St. David Catholic Church, Davie (as recently as 21 July 2018 for W7, 22

April 2017 for Y3, and 9 November 2017 for two unmarked birds; eBird data) and observed at the capture site (29 August 2018 for W7 and two unmarked birds, 1 July 2018 for Y3; R. Hermann in litt.), confirming that these ducks move between the two locations, which are about 3 km apart.

We agree with the consensus of those who have commented on this project and subsequent manuscript that the White-faced Whistling-Ducks in Davie more likely represent released or escaped individuals rather than natural vagrants; releases and escapes of exotic bird species are common in southern Florida (Simberloff et al. 1997). Reports for the church pond (eBird data) included several other exotic species such as Red-crested Pochards (*Netta rufina*), Muscovy Ducks (*Cairina moschata*), and Egyptian Geese (*Alopochen aegyptiaca*).

The lack of any breeding occurrences and very limited movements of White-faced Whistling-Ducks in Florida, along with demonstrated limited dispersal in their native range when food is readily available year-round (Petrie and Rogers 1997), suggest that establishment and expansion of the species in Florida is unlikely. That said, monitoring the distribution and abundance of White-faced Whistling-Ducks in Florida will be important for detecting any potential future changes to their population.

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Literature Cited

Braun, D. G. 2004. First documented nesting in the wild of Egyptian Geese in Florida. Florida Field Naturalist 32:138-143.

del Hoyo, J., A. Elliott, and J. Sargatal. 1992. Handbook of the Birds of the World. Vol. 1. Ostrich to Ducks. Lynx Edicions, Barcelona, Spain.

Dickinson, E. C., N. Bahr, R. Dowsett, D. Pearson, V. Remsen, C. S. Roselaar, and D. Schodde. 2004. The Howard and Moore Complete Checklist of Birds of the World. Princeton University Press, Princeton, New Jersey.

Douthwaite, R. J. 1977. Filter-feeding ducks of the Kafue Flats, Zambia, 1971-1973. Ibis 119:44-66.

EDDMapS. 2018. Early Detection & Distribution Mapping System. The University of Georgia – Center for Invasive Species and Ecosystem Health. <http://www.eddmaps.org/>. (Last accessed 20 March 2018.)

Greenlaw, J. S. 2014. Twenty-second report of the Florida Ornithological Society Records Committee: 2012. Florida Field Naturalist 42:153-171.

Greenlaw, J. S., B. Pranty, and R. Bowman. 2014. The Robertson and Woolfenden Florida Bird Species: An Annotated List. Special Publication Number 8, Florida Ornithological Society, Gainesville.

Johnson, S. A., and M. Hawk. 2009. Florida's introduced birds: Muscovy Duck (*Cairina moschata*). WEC 54 UF IFAS Extension 2009:1-4.

Petrie, S. A. 2000. Winter and spring foods of White-faced Whistling-Ducks in northern KwaZulu-Natal, South Africa. South African Journal of Wildlife Research 30:96-101.

Petrie, S. A. 2005. Spring body condition, moult status, diet and behaviour of White-faced Whistling-Ducks (*Dendrocygna viduata*) in northern South Africa. African Zoology 40:83-92.

Petrie, S. A., and K. H. Rogers. 1997. Satellite tracking of White-faced Whistling-Ducks in a semiarid region of South Africa. The Journal of Wildlife Management 61:1208-1213.

Pranty, B., and V. Ponzo. 2014. Status and distribution of Egyptian Geese (*Alopochen aegyptiaca*) in southeast Florida. Florida Field Naturalist 42:91-107.

Robertson, W. B., and G. E. Woolfenden. 1992. Florida Bird Species: An Annotated List. Special Publication Number 6, Florida Ornithological Society, Gainesville.

Simberloff, D., D. C. Schmitz, and T. C. Brown. 1997. Strangers in Paradise: Impact and Management of Nonindigenous Species in Florida. Island Press, Washington D.C.

Sullivan, B. L., C. L. Wood, M. J. Iliff, R. E. Bonney, D. Fink, and S. Kelling. 2009. eBird: A citizen-based bird observation network in the biological sciences. Biological Conservation 142:2282-2292.

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OPPORTUNISTIC FORAGING ON NESTLING REGURGITANTS BY ADULT SNOWY EGRETS (*Egretta thula*)

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A fundamental process underlying wetland ecosystem functions is nutrient transfer, which in part can modify ecological communities and populations (Frederick and Powell 1994, Ellison et al. 1996). Nutrient transfer has been studied in wading birds (Pelecaniformes and Ciconiiformes), which nest in large colonies. Due to mobility and large aggregations at colonial nesting sites, wading birds play an important role in the transfer of energy throughout wetland ecosystems (Kushlan 1976). Several mechanisms by which nutrients are transferred by wading birds include chick mortality, bird guano and regurgitated food (Frederick and Powell 1994, Irick et al. 2015, Nell and Frederick 2015). While some mechanisms of nutrient transfer such as chick mortality due to brood reduction are well documented (Stoleson and Beissinger 1995, Mock and Parker 1997 p. 464, Nell and Frederick 2015, Nell et al. 2016), others are less well known, or all together novel. Here, we provide a new account of nutrient transfer, through the adult procurement of fallen nestling regurgitants (food boluses) in a Florida Everglades wading bird colony.

Fallen nestling regurgitants can occur, but not limited to, the following. First, the transfer of fresh boluses from parent to nestling is not always successful, and some may drop from the nest during aggressive nestling behavior due to interbrood competition (Quinney 1982, Herring et al. 2011). Second, nestlings, especially those being fed large quantities of crabs, crayfish, or the like, regurgitate digested hard parts, known as ejecta or pellets (Rosenberg and Cooper 1990). Lastly, wading bird nestlings voluntarily regurgitate in the presence of predators, which typically constitute whole undigested, or partially digested prey items (Byers 1951, Furness and Hislop 1981, Nell and Frederick 2015). The crowded nesting colonies in which regurgitation occurs may provide substantial nutritive value which can attract scavengers and opportunistic predators. On the Cedar Keys (Levy County) of the Florida peninsula's northern Gulf coast, cottonmouth snakes (*Agkistrodon conanti*) use ejecta from nestling Brown Pelicans (*Pelecanus occidentalis*) and Double-crested Cormorants *(Phalacrocorax auritus*) as a primary energy source (Lillywhite et al. 2002, Sandfoss et al. 2017). In the Florida Everglades, American alligators (*Alligator mississippiensis)* that reside in or near wading bird colonies are known to benefit from the consumption of fallen food boluses, though they constitute only a small portion of the alligators' food requirements due to the alligators' larger body size (Nell and Frederick 2015, Nell et al. 2016). However, wading birds, especially small herons (*Egretta* spp.*)* have lower caloric needs due to their smaller body size, thus may benefit greatly from fallen food boluses, especially during the nesting season, when dietary requirements are greater (Kahl 1964, Kushlan 1980, Loftus and Eklund 1994). The potential for energy transfer is

high in environments such as large, crowded wading bird colonies, where animals might exhibit opportunistic behaviors to respond to said potential.

On 20 April 2017 we observed Snowy Egret (*Egretta thula)* adults foraging on fallen wading bird nestling food boluses in Paurotis Pond wading bird colony, in Everglades National Park, Florida (25° 28′ 15″ N, 80° 80′ 30″ W). We observed individuals from a distance of 15-30 m from a red mangrove tree (*Rhizophora mangle)* approximately 5 m off the ground. The weather was 26 °C and sunny.

We observed six Snowy Egret adults actively foraging on and consuming food boluses that had been regurgitated by nestling wading birds and fallen into the water. After picking up fallen boluses, the birds flew to nearby branches where they remained on nests in the understory canopy for approximately 3-5 min, before returning to the water to forage on more fallen boluses and repeating the pattern of behavior. From our position, we were able to observe the birds with boluses in their bills prior to consumption. Five of the Snowy Egret adults flew to heavily vegetated branches between foraging bouts, which partially obstructed our view of their behavior with chicks at the nest. However, one Snowy Egret adult flew between foraging bouts to a nest unobstructed by foliage, approximately 10 m from our observation site. Due to our higher location in the tree, we were able to observe three Snowy Egret chicks approximately 14 days old in the nest. The adult proceeded to feed the two larger chicks with the newly foraged boluses. After approximately 5 min the Snowy Egret adult returned to the shallow water below and continued foraging. To minimize our disturbance in the colony we left our observation site after 30 min.

Species of wading bird nestlings we saw regurgitate into the water included Snowy Egret, Wood Stork (*Mycteria americana),* Tricolored Heron (*Egretta tricolor)*, Roseate Spoonbill (*Platalea ajaja),* and Great Egret (*Ardea alba)*. Wading birds nesting in Paurotis Pond readily regurgitated during site visits, although it is unclear whether this regurgitation was due to our presence or that of a large (approximately 2-3 m) American alligator beneath the nests. The adult Snowy Egrets did not appear disturbed, as they remained in close proximity (< 30 m) to our location and showed no behavioral signs of stress or defensive posturing. We also observed the American alligator feeding on freshly fallen boluses alongside Snowy Egret adults (within 5-20 m). All animals foraged in approximately 15 cm of turbid, brackish water.

To our knowledge, this is the first recorded account of wading birds consuming fallen boluses as a food resource and using them to feed chicks. Although Snowy Egrets are known as a diet specialist, foraging primarily on fish (Jenni 1969, Kushlan 1981, Klassen et al. 2016), studies have shown they can switch foraging strategies as hydrologic patterns change (Smith 1997, Gawlik 2002, Green and Leberg 2005, Boyle et al. 2012). This account is a new demonstration of the species' opportunistic and flexible feeding strategy during a time of great energetic demands.

Whole, undigested or partially digested prey items in close proximity to the nest provide wading birds with energetically advantageous mechanism to obtain an abundant food resource during the nesting season (April-June). Fallen boluses require minimal capture effort relative to live prey, while largely providing the same caloric density. The energy costs associated with prey handling, search time, and flying are to a great degree eliminated, the latter of which accounts for nearly a third of Snowy Egrets total energy budget (Maccarone et al. 2008). Also, the short travel distance further reduces energy expenditure and time away from the nest. This newly described opportunistic foraging behavior can provide energetic advantages to adult wading birds and may be a benefit of nesting colonially that has not previously been considered.

Previous studies including White Ibis (*Eudocimus albus*) intervening the bolus transfer from adult to nestling, or removing boluses from the throats of unattended ibis nestlings supports such opportunistic behaviors in colonial nesters (Frederick 1985). The occurrence of such behavioral opportunities in colonies may occur with more regularity

than what is currently reported. Furthermore, it is important to note that little is known about the frequency of bolus regurgitation in the absence of human disturbance, while one study suggests this is rare (Nell and Frederick 2015). This knowledge gap may leave readers questioning the importance of this novel feeding behavior if the trigger for regurgitation is indeed largely a response to human disturbance. However, as the urban landscape encroaches on wetland habitats, and more wading bird colonies are forced closer to human disturbances (i.e., golf courses, urban parks, and boating traffic), nestling regurgitations and therefore opportunistic feeding behaviors may become more common.

Acknowledgments

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Literature Cited

Boyle, R. A., N. J. Dorn, and M. I. Cook. 2012. Nestling diet of three sympatrically nesting wading bird species in the Florida Everglades. Waterbirds 35:154-159.

Byers, E. 1951. Feeding behavior of young American Bitterns. Wilson Bulletin 63:334-336.

Ellison, A. M., E. J. Farnsworth, and R. R. Twilley. 1996. Facultative mutualism between red mangroves and root-fouling sponges in Belizean Mangal. Ecology 77:2431-2444.

Fair, J., E. Paul, and J. Jones (Eds.). 2010. Guidelines to the Use of Wild Birds in Research. Ornithological Council, Washington, D.C.

Frederick, P. C. 1985. Intraspecific food piracy in White Ibis. Journal of Field Ornithology 56:413-414.

Frederick, P. C., and G. V. N. Powell III. 1994. Nutrient transport by wading birds in the Everglades. Pages 571-584 *in* Everglades: The Ecosystem and its Restoration (S. M. Davis and J. C. Ogden, Eds.). St. Lucie Press, Boca Raton, Florida.

Furness, R. W., and J. G. Hislop. 1981. Diets and feeding ecology of Great Skuas *Catharacta skua* during the breeding season in Shetland. Journal of Zoology 195:1-23.

Gawlik, D. E. 2002. The effects of prey availability on the numerical response of wading birds. Ecological Monographs 72:329-346.

Green, C. M., and P. L. Leberg. 2005. Influence of plumage colour on prey response: Does habitat alter heron crypsis to prey? Animal Behaviour 70:1203-1208.

Herring, G., M. I. Cook, D. E. Gawlik, and E. M. Call. 2011. Food availability is expressed through physiological stress indicators in nestling white ibis: A food supplementation experiment. Functional Ecology 25:682-690.

Irick, D. L., B. Gu, L. C. Yuncong, P. W. Inglett, P. C. Frederick, M. S. Ross, A. L. Wright, and S. M. L. Ewe. 2015. Wading bird guano enrichment of soil nutrients in tree islands of the Florida Everglades. Science of the Total Environment 532:40-47.

Jenni, D. A. 1969. A study of the ecology of four species of herons during the breeding season at Lake Alice, Alachua County, Florida. Ecological Monographs 39:245-270.

Kahl, M. P. 1964. Food ecology of the wood stork (*Mycteria americana*) in Florida. Ecological Monographs 34:98-117.

Klassen, J. A., D. E. Gawlik, and P. C. Frederick. 2016. Linking wading bird prey selection to number of nests. Journal of Wildlife Management 80:1450-1460.

Kushlan, J. A. 1976. Wading bird predation in a seasonally fluctuating pond. Auk 93:464-476.

Kushlan, J. A. 1980. Population fluctuations of Everglades fishes. Copeia 4:870-874.

Kushlan, J. A. 1981. Resource use strategies of wading birds. Wilson Bulletin 93:145-163.

Lillywhite, H. B., C. M. Sheehy III, and M. D. McCue. 2002. Scavenging behaviors of cottonmouth snakes at island bird rookeries. Herpetological Review 33:259-260.

Loftus, W. F., and A. M. Eklund. 1994. Long-term dynamics of an Everglades small-fish assemblage. Pages 461-483 *in* Everglades: The Ecosystem and its Restoration (S. M. Davis and J. C. Ogden, Eds.). St. Lucie Press, Boca Raton, Florida.

Maccarone, A. D., J. N. Brzorad, and H. M. Stone. 2008. Characteristics and energetics of Great Egret and Snowy Egret foraging flights. Waterbirds 31:541-549.

Mock, D. W., and G. A. Parker. 1997. The Evolution of Sibling Rivalry. Oxford Series in Ecology and Evolution. Oxford University Press, New York, New York.

Nell, L. A., and P. C. Frederick. 2015. Fallen nestlings and regurgitant as mechanisms of nutrient transfer from nesting wading birds to crocodilians. Wetlands 35:723-732.

Nell, L. A., P. C. Frederick, F. J. Mazzotti, K. A. Vliet, and L. A. Brandt. 2016. Presence of breeding birds improves body condition for a crocodilian nest protector. PLoS ONE 11: e0149572.

Quinney, T. E. 1982. Growth, diet, and mortality of nestling Great Blue Herons. Wilson Bulletin 94:571-577.

Rosenberg, K. V., and R. J. Cooper. 1990. Approaches to avian diet analysis. Pages 80-90 *in* Avian Foraging: Theory, Methodology, and Applications (M. L. Morrison, C. J. Ralph, J. Verner, and J. R. Jehl, Jr., Eds.). Studies in Avian Biology No. 13, Cooper Ornithological Society.

Sandfoss, M. R., C. M. Sheehy III, and H. B. Lillywhite. 2017. Collapse of a unique insular bird-snake relationship. Journal of Zoology 304:276-283.

Smith, J. P. 1997. Nesting season food habits of 4 species of herons and egrets at Lake Okeechobee, Florida. Colonial Waterbirds 20:198-220.

Stoleson, S. H., and S. R. Beissinger. 1995. Hatching asynchrony and the onset of incubation in birds, revisited. Pages 191-270 *in* Current Ornithology Vol. 12 (D. M. Power, Ed.). Springer, Boston, Massachusetts.

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LICE AND MITES COLLECTED FROM A WOOD THRUSH (*Hylocichla mustelina*), A BLACK-AND-WHITE WARBLER (*Mniotilta varia*), A COMMON GRACKLE (*Quiscalus quiscula*), AND A NORTHERN MOCKINGBIRD (*Mimus polyglottos*) ON VACA KEY, FLORIDA

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Florida's bird fauna is species-rich with over 500 species known from the state (Greenlaw et al. 2014). Yet little to nothing is known about the ectoparasite fauna of most species; what is known was summarized by Forrester and Spalding (2003). Since then few contributions have been made to our knowledge. This note reports ectoparasites removed from three birds found dead outside a building on Vaca Key in the City of Marathon, Monroe County, Florida (24.729984, -81.039438) and one bird killed by a moving vehicle also on Vaca Key. All birds were examined for ectoparasites and specimens were handled and prepared for study as in previous reports (Hribar and Miller 2011; Hribar 2013, 2014). Slide-mounted specimens were sent to specialists for identification.

The Wood Thrush (*Hylocichla mustelina*) was once much commoner than it is now; since 1966 its numbers have declined almost 2% per year (Sauer et al. 2012). It is rarely observed in the Florida Keys, and then only in the spring and autumn, during migration (USFWS 1994). Forrester and Spalding (2003) reported no records of ectoparasitic mites from this bird in Florida. An unidentified feather mite *Analges* sp. (Analgidae) was recovered from a Wood Thrush in Tennessee (Reeves et al. 2007).

A Wood Thrush was found dead on 9 April 2014. Five feather mites were recovered from the specimen: one male of the family Analgidae and four mites of Trouessartiidae; two trouessartiid specimens were collected *en copula*. All mite specimens were sent for identification but apparently were lost or discarded. Given the lack of information on the ectoparasite fauna of Wood Thrushes and their declining numbers, even these limited data may prove useful.

A Black-and-white Warbler (*Mniotilta varia*) was found on 5 May 2015. Over 100 feather mites were collected. Nineteen were mounted on slides and were identified as follows: *Amerodectes seiurus* Mironov and Chandler (Proctophyllodidae), 4 males, 3 females; an undescribed *Analges* sp. (Analgidae), 1 male; and an undescribed *Trouessartia* sp. (Trouessartiidae), 4 males, 4 females, 3 tritonymphs. This mite was described from specimens taken from an Ovenbird, *Seiurus aurocapilla* in Georgia (Mironov and Chandler 2017). This is apparently the first report of this mite in Florida. Five feather lice were found: 2 males, 1 female, 2 nymphs. These were identified as *Menacanthus aurocapillus* Carriker (Phthiraptera: Menoponidae). This louse has previously been taken from *M. varia* in the British West Indies (Price 1977). The present report appears to be the first record of this louse from Florida (Forrester and Spalding 2003).

A juvenile Common Grackle (*Quiscalus quiscula*) was found on 25 June 2015. Three mites and two lice were taken from the specimen. The mites were identified as an undescribed *Trouessartia* sp. (Trouessartiidae), 1 male and 1 female; and one oribatid mite (Oribatei). Oribatid mites generally inhabit soil but there are surprisingly many records of these mites being taken from birds (Krivolutsky and Lebedeva 2004a, b; Lebedeva and Lebedev 2008). The lice were identifiable only to genus, *Myrsidea* (Menoponidae). Lice previously known from the Common Grackle include *Myrsidea fuscomarginata* (Osborn) and *Philopterus quiscali* (Osborn) (Philopteridae) (Peters 1936, Clay 1968, Forrester et al. 1995).

A Northern Mockingbird (*Mimus polyglottos*) was found on 1 May 2018, dying after apparently being struck by a vehicle. Four *Analges* sp. mites (Analgidae), representing an undescribed species, were recovered from this specimen: 1 male, 1 female, and 2 tritonymphs. Feather mites do not appear to have been reported previously from mockingbirds in Florida (Phillis and Cromroy 1972, Forrester and Spalding 2003). Northern Mockingbirds are among the species most likely to turn up as roadkill in Florida (Forrester and Spalding 2003).

An unknown number of passerine birds die each year in Florida after colliding with windows in buildings (Forrester and Spalding 2003). Avise and Crawford (1981) mentioned that collisions with low-rise buildings, buildings less than 35 meters in height (Emporis Standards 2018), and low-strung power lines might account for many more bird deaths than collisions with towers and high-rise buildings. Later, Loss et al. (2014) reported that as many as 988,000,000 birds were killed annually in the United States due to collisions with manmade structures, over half of them low-rise buildings. Bird deaths due to collisions with vehicles are very difficult to quantify and any estimate is probably too low (Forrester and Spalding 2003).

As in previous reports of feather mites from the Florida Keys, a number of undescribed species were collected (Hribar 2013, 2014; Hribar and Miller 2011). By one estimate as few as 20% of feather mite species may be known to science (Mironov 2003). Mites belonging to the genus *Analges* are found in down feathers and downy parts of vaned body feathers (Mironov 1999). *Analges* is the most species-rich genus in the Analgidae, with about 60 species known exclusively from passerines (S. Mironov, pers. comm.). *Trouessartia* mites are found in the vanes of remiges (major wing feathers) and rectrices (tail feathers) (Mironov 1999). *Trouessartia* is the most species-rich genus in the Trouessartiidae, with about 115 species known mainly from passerines and a few species from Piciformes (Hernandes 2014, Mironov and Bermúdez 2017). The genus *Amerodectes* (Proctophyllodidae) contains about 40 species, all known from passerines (Mironov and Chandler 2017). *Amerodectes* mites, like other Proctophyllodidae, are found on the ventral sides of remiges and rectrices in corridors between adjacent barbs (S. Mironov, pers. comm., Mironov and O'Connor 2014). The preferred area for oviposition by some lice in the genus *Myrsidea* is on the upper neck region of the host bird (Cicchino and Valim 2015). Similarly, at least one species in the genus *Menacanthus* also oviposits on the neck and head of the host (Saxena et al. 2012).

Lice and feather mites generally do not directly affect their host's fitness (Hamstra and Badyaev 2008). The number of feather mites found on a bird appears to have no direct relationship to any aspect of body condition or fitness (Matthews et al. 2018). Feather mites feed on secretions of the uropygial gland but there may not be a direct relationship between glandular secretions and mite numbers (Proctor 2003, Pap et al. 2010). It is possible that mites and lice may serve as vectors of pathogens infecting birds. Quill mites (Syringophyllidae) have been found naturally infected with the bird pathogen *Anaplasma phagocytophyllum* and some lice are intermediate hosts of parasitic nematodes (Cohen et al. 1991, Skoracki et al. 2006).

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Literature Cited

Avise, J. C., and R. L. Crawford. 1981. A matter of lights and death. Natural History 90:6-14.

Cicchino, A. C., and M. P. Valim. 2015. Notes on taxonomy and distribution of *Myrsidea serini* (Séguy, 1944) (Phthiraptera: Amblycera: Menoponidae) on southern South American passerine birds (Aves: Passeriformes). Papéis Avulsos de Zoologia 55:231-243.

Clay, T. 1968. Contributions toward a revision of *Myrsidea* (Menoponidae: Mallophaga) III. Bulletin of the British Museum (Natural History) Entomology 21:203-243 +4 plates.

Cohen, S., M. T. Greenwood, and J. A. Fowler. 1991. The louse *Trinoton anserinum* (Amblycera: Phthiraptera), an intermediate host of *Sarconema eurycerca* (Filarioidea: Nematoda), a heartworm of swans. Medical and Veterinary Entomology 5:101-110.

Emporis Standards. 2018. Low-rise Building (ESN 49213). <https://www.emporis.com/building/standard/15/low-rise-buildinghttps://www.emporis.com/building/standard/15/low-rise-building>. (Accessed 15 October 2018).

Forrester, D. J., H. W. Kale II, R. D. Price, K. C. Emerson, and G. W. Foster. 1995. Chewing Lice (Mallophaga) from Birds in Florida: A Listing by Host. Bulletin of the Florida Museum of Natural History 39(1):1-44.

Forrester, D. J., and M. G. Spalding. 2003. Parasites and Diseases of Wild Birds in Florida. University Press of Florida, Gainesville.

Greenlaw, J. S., B. Pranty, and R. Bowman. 2014. The Robertson and Woolfenden Florida Bird Species: An Annotated List. Special Publication No. 8, Florida Ornithological Society, Gainesville.

Hamstra, T. L., and A. V. Badyaev. 2008. Comprehensive investigation of ectoparasite community and abundance across life history stages of avian host. Journal of Zoology 278:91-99.

Hernandes, F. A. 2014. Five new species of the feather mite genus *Trouessartia* Canestrini from South America (Acari: Trouessartiidae). Zootaxa 3856:50-72.

Hribar, L. J. 2013. Ectoparasites collected from the Ovenbird (Aves: Passeriformes: Parulidae) on Vaca Key, Florida. Florida Field Naturalist 41:123-125.

Hribar, L. J. 2014. Parasitic mites collected from perching birds (Aves: Passeriformes) on Vaca Key, Florida. Florida Field Naturalist 42:119-123.

Hribar, L. J., and G. L. Miller. 2011. Ectoparasites collected from the Common Yellowthroat, (Aves: Passeriformes: Parulidae) on Vaca Key, Florida. Florida Field Naturalist 39:138-141.

Krivolutsky, D. A., and N. V. Lebedeva. 2004a. Oribatid mites (Oribatei, Acariformes) in bird feathers: non-passerines. Acta Zoologica Lituanica 14(1): 26-47.

Krivolutsky, D. A., and N. V. Lebedeva. 2004b. Oribatid mites (Oribatei) in bird feathers: passerines. Acta Zoologica Lituanica 14(2):19-38.

Lebedeva, N. V., and V. D. Lebedev. 2008. Transport of oribatid mites to the polar areas by birds. Pages 359–367 *in* Integrative Acarology: Proceedings of the Sixth Congress of the European Association of Acarologists. (M. Bertrand, S. Kreiter, K. D. McCoy, A. Migeon, M. Navajas, M.-S. Tixier, and L. Vial, Eds.). European Association of Acarologists, Prague, Czech Republic.

Loss, S. R., T. Will, S. S. Loss, and P. P. Marra. 2014. Bird-building collisions in the United States: Estimates of annual mortality and species vulnerability. Condor 116:8-23.

Matthews, A. E., J. L. Larkin, D. W. Raybuck, M. C. Slevin, S. H. Stoleson, and T. J. Boves. 2018. Feather mite abundance varies but symbiotic nature of mite-host relationship does not differ between two ecologically dissimilar warblers. Ecology and Evolution 8:1227-1238.

Mironov, S. V. 1999. Feather mites: General morphological adaptations, phylogeny and coevolutionary relationships with birds. Ekologija 2: 57-66.

Mironov, S. V. 2003. On some problems in the systematics of feather mites. Acarina 11:3-29.

Mironov, S. V., and S. Bermúdez. 2017. Feather mites (Acari: Analgoidea) associated with the hairy woodpecker *Leuconotopicus villosus* (Piciformes: Picidae) in Panama. Acarologia 57:941-955.

Mironov, S. V., and C. R. Chandler. 2017. New feather mites of the genus *Amerodectes* Valim and Hernandes (Acariformes: Proctophyllodidae) from passerines (Aves: Passeriformes) in Georgia, USA. Zootaxa 4344:201-245.

Mironov, S. V., and B. M. O'Connor. 2014. New species of the feather mite family Proctophyllodidae (Acariformes: Astigmata) from two species of mockingbirds (Passeriformes: Mimidae) in eastern North America. Journal of Medical Entomology 51:529-546.

Pap, P. L., C. I. Vágási, G. Osváth, C. Mureşan, and Z. Barta. 2010. Seasonality in the uropygial gland size and feather mite abundance in house sparrows *Passer domesticus*: Natural covariation and an experiment. Journal of Avian Biology 41:653-661.

Peters, H. S. 1936. A list of external parasites from birds of the eastern part of the United States. Bird-Banding 7:9-27.

Phillis, W. A. III, and H. L. Cromroy. 1972. A preliminary survey of the ectoparasitic mites (Acari) of the house sparrow and mockingbird in Florida. Florida Entomologist 55:258.

Price, R. D. 1977. The *Menacanthus* (Mallophaga: Menoponidae) of the Passeriformes (Aves). Journal of Medical Entomology 14:207-220.

Proctor, H. C. 2003. Feather mites (Acari: Astigmata): Ecology, behavior, and evolution. Annual Review of Entomology 48:185-209.

Reeves, W. K., L. A. Durden, C. M. Ritzi, K. Y. Beckam, P. E. Super, and B. M. O'connor. 2007. Ectoparasites and other ectosymbiotic arthropods of vertebrates in the Great Smoky Mountains National Park, USA. Zootaxa 1392:31-68.

Sauer, J. R., J. E. Hines, J. E. Fallon, K. L. Pardieck, D. J. Ziolkowski, Jr., and W. A. Link. 2012. The North American Breeding Bird Survey, Results and Analysis 1966-2010. Version 12.07.2012. USGS Patuxent Wildlife Research Center, Laurel, Maryland.

Saxena, A. K., G. Arya, and N. Bansal. 2012. Egg laying site and oviposition pattern of two phthirapteran species parasitizing Red Whiskered Bulbul (*Pycnonotus jocosus*). Türkiye Parazitoloji Dergisi 36:166-168.

Skoracki, M., J. Michalik, B. Skotarczak, A. Rymaszewska, B. Sikora, T. Hofman, B. Wodecka, and M. Sawczuk. 2006. First detection of *Anaplasma phagocytophilum* in quill mites (Acari: Syringophilidae) parasitizing passerine birds. Microbes and Infection 8:303-307.

USFWS [U.S. Fish and Wildlife Service]. 1994. Birds of Florida Keys National Wildlife Refuges. 10 <http://www.npwrc.usgs.gov/resource/birds/chekbird/r4/flkeys.htm>. (Accessed 10 April 2014.)

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FIELD OBSERVATIONS

Summer Report: June-July 2018.—This report consists of significant bird observations compiled by the Field Observations Committee (FOC). Electronic submissions to the FOC should be in the following format: species, number of individuals, age and sex of the bird(s), color morph if applicable, location (including county), date, observer(s), and significance. Seasons are winter (December-February), spring (March-May), summer (June-July), and fall (August-November). Submit observations to regional compilers within two weeks after the close of each season, or to the state compiler within one month. Addresses of the compilers follow this report.

Sight-only observations are considered "reports" while only those observations supported by verifiable evidence (photographs, video or audio recordings, or specimens) are called "records." Species for which documentation is required by the FOC and by the FOS Records Committee (FOSRC; <fosbirds.org/official-florida-state-bird-list>) are marked here with an asterisk (*). A county designation (in italics) accompanies the first-time listing of each site in this report. Abbreviations in this report are: AFB = Air Force Base, AFR = Air Force Range, CA = Conservation Area, EOS = end of season, m. obs. = many observers, NERR = National Estuarine Research Reserve, NP = National Park, NSRA = North Shore Restoration Area, NWR = National Wildlife Refuge, SF = State Forest, SP = State Park, STA = Stormwater Treatment Area, STF = sewage treatment facility, WMA = Wildlife Management Area, and N, S, E, W etc., for compass directions. Bold-faced entries denote birds newly reported or verified in Florida, or record numbers. +Photographs or video- or audio-recordings archived by the FOC are identified by a plus (+).

Summary of the Summer Season

FOSRC review species listed in this report include an Inca Dove, a Zenaida Dove, one Ruff, two Red-billed Tropicbirds, a Stygian Owl, and one MacGillivray's Warbler.

Species Accounts

Black-bellied Whistling-Duck: 10 at Rabon Road (*Jefferson*) 22 Jun (M. Smith, R. Emond); 110 at Escambia County Utility Authority Wetlands (*Escambia*) 18 Jul (J. Callaway, B. Callaway).

Canada Goose: Up to 7 at Wacahoota (*Alachua*) 10 Jun-2 Jul (B. Woodmansee, H. Adams, L. Hensley).

Egyptian Goose: 1 at Gainesville (*Alachua*) through EOS (N. McDuffy, D. Rohan et al.).

Mottled Duck: 1 at Lakes of Leesburg (*Lake*) 9-13 Jun (H. Trecartin); 1 at Royal Highlands (*Lake*) 1 Jul (J. Walker).

Blue-winged Teal: 1 at Sweetwater Wetlands Park (*Alachua*) to 4 Jul (D. Rohan, T. Kent et al.); 1 at Paynes Prairie Preserve SP (*Alachua*) 17 Jun (J. Martin).

Redhead: 1 at St. Marks NWR (*Wakulla*) 5 Jun (D. Morrow).

Ring-necked Duck: 1 female at Lake Apopka Wildlife Drive (*Orange*) 29 Jun (+S. Murphy).

Greater Scaup: 1 at Tram Road Holding Ponds (*Leon*) 4 Jun (J. O'Connell); 2 at St. Marks NWR 18 Jul (D. Morrow).

Common Eider: 1 continued at Miami Beach Marina (*Miami-Dade*) 1 Jun-EOS (m. obs.); 1 at Port Canaveral (*Brevard*) 20-28 Jun (J. Hanfam).

Black Scoter: 1 offshore at Tom Renick Park (*Volusia*) 18 Jul (H. Robinson).

Ruddy Duck: 1 at Shiloh Marsh Road (*Volusia*) 3 Jul (L. Beegle).

*Inca Dove: 1 at E Pensacola (*Escambia*) 10 Jun (L. Goodman).
White-winged Dove: 1 at Southwood Subdivision (*Leon*) 10 Jun (J. O'Connell).
*Zenaida Dove: 1 adult male at West Kendall Agricultural Fields (*Miami-Dade*) 8 Jul-EOS (+A. Lamoreaux, m. obs.).
Mangrove Cuckoo: 1 at S *Pinellas* 4-10 Jul (+R. Smith et al.).
Smooth-billed Ani: 1 at Miami Gardens Drive Canal (*Miami-Dade*) 16 Jun (M. Hesles); 1 at South County Regional Park (*Palm Beach*) 16-17 Jul (m. obs.).
Black Rail: 1 at St. Marks NWR 1 Jun (D. Bryan).
Sora: 1 at South Tremain Street (*Lake*) 24 Jun (H. Hartshome).
Gray-headed Swamphen: 1 at Lake Apopka Wildlife Drive 3 Jun-21 Jul (B. Taylor).
Purple Gallinule: 4 at Green Cove Springs (*Clay*) 19-20 Jul (M. Fethe).
Whooping Crane: 1 at Micanopy (*Alachua*) through EOS (J. Donsky et al.).
Black-necked Stilt: 119 offshore at Tom Renick Park 26 Jul (H. Robinson).
American Avocet: 1 at St. Marks NWR 22 Jul (M. Smith, R. Emond).
Piping Plover: 1 at Smyrna Dunes Park (*Volusia*) 2 Jul (R. Wallace); 1 at St. George Island SP (*Franklin*) 16 Jul (J. Murphy).
Whimbrel: 2 at Bald Point SP (*Franklin*) 10 Jul (J. Murphy); 2 at Tom Renick Park 21-28 Jul (H. Robinson).
Long-billed Curlew: 1 at S Anclote Key (*Pinellas*) 15 Jun (+R. Smith); 1 at Ponte Vedra Beach (*St. Johns*) 17 Jul (J. Marchionno).
Red Knot: 1 at St. Marks NWR 2 Jul (D. Morrow); 8 at Dog Island (*Franklin*) 3 Jul (D. Morrow, A. Morrow, D. Legare).
*Ruff: 1 at Okaloosa County STF (*Okaloosa*) 30 Jun-1 Jul (B. Purdy, M. Swan, A. Knothe).
Stilt Sandpiper: 1 at St. Marks NWR 22 Jul (D. Morrow).
Dunlin: 1 at St. Marks NWR 22 Jul (+M. Smith, R. Emond).
Least Sandpiper: As many as 193 at Tom Renick Park 30 Jul (H. Robinson).
White-rumped Sandpiper: 1 juvenile at Gandy Beach (*Pinellas*) 23 Jul (+A. Ruben).
Pectoral Sandpiper: 1 at Orlando Wetlands Park (*Orange*) 13 Jul (L. Gray); 1 at Fort De Soto Park (*Pinellas*) 18 Jul (P. Plage); 2 at Bald Point SP 27 Jul (J. Murphy).
Semipalmated Sandpiper: 68 at Tom Renick Park 30 Jul (H. Robinson).
Western Sandpiper: 7 at Bald Point SP 10 Jul (J. Murphy).
Short-billed Dowitcher: 2 at Lake Apopka Wildlife Drive 28 Jul (J. Eager, m. obs.).
Long-billed Dowitcher: 1 at Lake Apopka Wildlife Drive 28 Jul (P. Hueber).
Spotted Sandpiper: 1 at Newnans Lake (*Alachua*) 1 Jun (R. Rowan); 1 at Sweetwater Wetlands Park 2 Jun (H. Adams, B. Hall et al.); 1 at Cummer Road (*Lake*) 19 Jul (+D. LaGrange).
Solitary Sandpiper: 1 at Algae Mat Wetland (*Indian River*) 18 Jul (+G. Mina); 1 at Cummer Road 19 Jul (+D. LaGrange).
Greater Yellowlegs: 1 at Lake Apopka Wildlife Drive 29 Jun (S. Murphy).
Willet: Up to 2 at Lake Apopka Wildlife Drive 29 Jun-4 Jul (P. Hueber).
Parasitic Jaeger: 1 offshore at Tom Renick Park 18 Jul (H. Robinson).
Ring-billed Gull: 1 at Gainesville through 2 Jun (J. Donsky et al.).
Lesser Black-backed Gull: 1 adult at Fort De Soto Park 15 Jun-30 Jul (R. Smith et al.).
Black Noddy: 1 at Garden Key, Dry Tortugas NP (*Monroe*) 13-23 Jun (K. Corliss).
Sooty Tern: Up to 44 offshore Port Canaveral 28 Jul (A. Kratter et al.)
Bridled Tern: 1 ca. 15 miles offshore Port Canaveral 26 Jun (+J. Eager); up to 49 offshore Port Canaveral 28 Jul (A. Kratter).
Least Tern: 1 at Gainesville 1 Jun (E. Kalinowski).
Caspian Tern: 1 at Crane's Roost (*Seminole*) 3 Jun (L. Frauen).
Black Tern: 1 at Lake Apopka (*Lake*) 5 Jun (G. DelPizzo, m. obs.); 1 at Lake Apopka Wildlife Drive 17 Jun (P. Hueber); 3 at Shands Pier (*Clay*) 23 Jul (S. Raduns); as many as 52 at Gandy Beach 31 Jul (+J. Clayton et al.).

ROSEATE TERN: 1 at Lighthouse Point Park (*Volusia*) 5 Jun (D. LaGrange, M. Brothers).

COMMON TERN: 1 at Black Point Wildlife Drive (*Brevard*) 2-12, 30 Jun (+J. Mileyka, m. obs); 1 at Lake Apopka 5 Jun (+D. Richard, m. obs.); 1 at Cocoa Beach Pier (*Brevard*) 8 Jun (C. Welsh); 35 at St. George Island SP 9 Jul (J. Murphy).

ARCTIC TERN: 1 ca. 15 miles off *Pinellas* 10 Jun (+T. Ploger, N. Ploger).

FORSTER'S TERN: 1 at Lake Apopka Wildlife Drive 24-29 Jun (C. Newton, m. obs.); 40 at Pensacola 10-20 Jun (A. Forster, S. Duncan).

ROYAL TERN: 2 at Lake Apopka 5 Jun (G. DelPizzo).

BLACK SKIMMER: 1 at Lake Apopka Wildlife Drive 1 Jun (L. Mathis); 1 at Lake Jessup (*Seminole*) 2 Jun (G. Williams).

*RED-BILLED TROPICBIRD: 1-2 at Pensacola Beach (*Escambia*) 2 Jul-16 Jun (E. Rhodes, D. Gesuldo).

COMMON LOON: 1 at Newnans Lake 2 Jun (R. Rowan et al.); 1 at Phil Foster Memorial Park (*Palm Beach*) 5 Jun-EOS (m. obs.)

CORY'S SHEARWATER: As many as 5 offshore Port Canaveral 28 Jul (A. Kratter).

GREAT SHEARWATER: 1 at N Bicentennial Park (*Brevard*) 5 Jul (+Z. Sutton); 1 ca. 30 miles offshore Ponce Inlet (*Volusia*) 8 Jul (L. Clark).

AUDUBON'S SHEARWATER: 1 offshore at Tom Renick Park 5 Jul (H. Robinson); up to 3 offshore Port Canaveral 28 Jul (A. Kratter).

WILSON'S STORM-PETREL: 1 ca. 15 miles off *Pinellas* 10 Jun (+T. Ploger, N. Ploger); up to 11 offshore Port Canaveral 28 Jul (A. Kratter).

BAND-RUMPED STORM-PETREL: 1 offshore Port Canaveral 28 Jul (A. Kratter).

MAGNIFICENT FRIGATEBIRD: 1 at St. George Island SP 28 Jun (J. Murphy); 1 at St. Augustine (*St. Johns*) 25 Jul (R. Rowan).

BROWN BOOBY: Up to 15 at Phillipe Park (*Pinellas*) through EOS (*fide* B. Lane); 1 at Jetty Park (*Brevard*) 8-28 Jul (+A. Satterfield); 1 offshore Port Canaveral 28 Jul (Y. Morrell).

DOUBLE-CRESTED CORMORANT: 1-2 in Gulf Breeze (*Santa Rosa*) 8 Jun-30 Jul (B. Duncan, L. Duncan).

AMERICAN WHITE PELICAN: 1 at Lady Lake (*Sumter*) 25 Jun (M Pitcher).

BROWN PELICAN: 1 at Crane's Roost 3 Jun (L. Frauen); 1 at Paynes Prairie Preserve SP 4-9 Jun (J. Donsky et al.).

AMERICAN BITTERN: 1 at Lake Apopka Wildlife Drive 6-8 Jun (D. Herbert, m. obs.); 1 at P.E.A.R. Park (*Lake*) 28 Jul (G. Quigley).

ROSEATE SPOONBILL: 1 at E Pensacola 3 Jun (J. Lloyd); 1-3 at Walnut Hill (*Escambia*) 10-30 Jul (J. Yuhasz); 38 at St. Marks NWR 26 Jul (C. Reiland-Smith, E. Thompson).

SWALLOW-TAILED KITE: 33 at Ashville (*Jefferson*) 25 Jul (M. Smith).

SNAIL KITE: 3 chicks at Paynes Prairie Preserve SP 1 Jun (K. Morin, B. Jeffery, A. Cardas); 1 at Lake Woodruff NWR (*Volusia*) 1 Jun (D. LaGrange); 1 at Lake Apopka Wildlife Drive 1 Jun (L. Mathis); 1 at Arnold Brothers Boat Ramp (*Lake*) 2-3 Jun (G. DelPizzo).

MISSISSIPPI KITE: 1 at Lake Apopka Wildlife Drive 1 Jun-29 Jul (L. Mathis); 1 at Lake Woodruff NWR 1-2 Jun (D. LaGrange); 1 at John's Lane (*Lake*) 3 Jun (G. DelPizzo); 1 at Quale Grove Road (*Lake*) 26-27 Jun (P. Seigler); 15 at Bassett Road (*Jefferson*) 28 Jul (M. Smith).

SHORT-TAILED HAWK: 1 dark morph at Walt Disney World area (*Orange*) 3 Jun-14 Jul (J. Thomton); 1 dark morph at Rock Springs Run (*Orange*) 5 Jun (+R. Merrigan); 3 dark, 1 light morph at Buck Lake CA (*Brevard*) 13-15 Jul (L. Lilja); 1 dark morph at P.E.A.R. Park 28 Jul (G. Quigley).

*STYGIAN OWL: 1 at private residence in Key West (*Monroe*) 1 Jun (+M. Hedden, et al.).

BURROWING OWL: 2 at agricultural fields west of Fellsmere WMA (*Indian River*) 26 Jul (+D. Richard).

BELTED KINGFISHER: 1 at Sweetwater Wetlands Park 7 Jun (T. Wronski); 1 at Micanopy 7 Jun (J. Donsky); 1 at Lake Giles (*Orange*) 8 Jul (T. Rodriguez); 1 at Lake Apopka Wildlife Drive 13 Jul (J. Knoll); 1 at Orlando Wetlands Park 13 Jul (L. Gray).

Yellow-bellied Sapsucker: 1 at Clearwater Lake Recreation Area (*Lake*) 24 Jun (J. Walker).
Hairy Woodpecker: 1 at Apalachicola National Forest (*Franklin*) 2 Jun (J. Murphy); 1 at Hal Scott Regional Preserve and Park 8 Jun (G. Williams); 1 at Rivertown Groves (*St. Johns*) 3 Jul (V. Whiting); 1 at Rock Springs Run State Preserve 6 Jul (D. Horton).
Crested Caracara: 1 at Fort George Island (*Duval*) 23 Jun (+M. Harris).
American Kestrel: 3 at Longwood (*Seminole*) 3 Jun-29 Jul (+G. Williams); 1 at North Binion Road/Lake View Drive (*Orange*) 16 Jun (+G. Williams); 1 at Keystone Drive/ Lake Pinelock area (*Orange*) 18-25 Jun, 12 Jul (J. Thomton); 1 at Calumet Drive (*Orange*) 22 Jun, 8 Jul (+B. Taylor); 1 at Dockside Street (*Orange*) 24 Jun (D. LaGrange); 1 at I-4/SR 434 (*Seminole*) 1, 7 Jul (S. Collins); 1 at West Orange Avenue (*Orange*) 14 Jul (+B. Taylor) .
Peregrine Falcon: 1 at Boyd Avenue (*Brevard*) 24 Jun (C. Ferro).
Rose-ringed Parakeet: 1 at State Road 50 (*Lake*) 17-30 Jul (+R. Hattaway).
Eastern Kingbird: 1 at Fort De Soto Park 31 Jul (E. Plage).
Gray Kingbird: 1 at Brooksville (*Hernando*) 16 Jul (+D. Love).
Black-whiskered Vireo: 1 at Gulf Breeze 6-25 Jun (B. Duncan, L. Duncan, S. Duncan).
House Crow: 1 adult at Nokomis Public Beach (*Sarasota*) 11 Jul (+J. Eager).
Purple Martin: 60 at Tierra Verde (*Pinellas*) 26 Jul (E. Plage).
Tree Swallow: 1 at Sweetwater Wetlands Park 1 Jun (G. Parks); 1 at Lake Apopka Wildlife Drive 29 Jun-4 Jul (+S. Murphy); 1 at Tom Renick Park 25 Jul (J. Morrison).
Bank Swallow: 1 at Playalinda Beach (*Brevard*) 1 Jun (M. Harris); 1 at Lake Apopka Wildlife Drive 2-16 Jun, 8 Jul (A. Wurster).
Cave Swallow: 1 at State Road 50 (*Orange*) 19 Jun (L. Mathis).
Carolina Chickadee: 1 at Fawn Lake (*Brevard*) 15 Jun (+J. Armstrong); 1 at Buck Lake CA 18 Jun, 13 Jul (G. Williams, J. Eager).
American Robin: Up to 2 at Gainesville to 19 Jun (G. Parks).
Gray Catbird: 2 at Gainesville 2 Jun-9 Jul (L. Davis, J. Martin et al.); 1 at Weedon Island Preserve (*Pinellas*) 4-10 Jul (+J. Clayton, R. Smith).
Pin-tailed Whydah: 1 at E Pensacola 14 Jun (L. Goodman); 1 at Pensacola 15 Jun (B. Neitzel); 1 at Crowne Center (*Volusia*) 5-6 Jul (+D. LaGrange).
Louisiana Waterthrush: 1 at Tallahassee (*Leon*) through EOS (J. Cavanagh); 1 at Gulf Breeze 26 Jun (B. Duncan, S. Duncan); 1 at Paynes Prairie Preserve SP 30 Jun (R. Rowan).
Black-and-white Warbler: 1 at Mead Botanical Gardens (*Orange*) 13 Jul (B. Miller); 2 at Sawgrass Lake Park (*Pinellas*) 14 Jul (+J. Clayton); 1 at Largo (*Pinellas*) 17 Jul (T. Young); 1 at St. Petersburg (*Pinellas*) 25-29 Jul (+J. Clayton).
Swainson's Warbler: 1 at Miccosukee Land Cooperative (*Leon*) 5 Jun (B. Phelan).
*MacGillivray's Warbler: 1 at Charles "Sonny" McCoy Indigenous Park (*Monroe*) 2 Jun (+S. Runyon).
American Redstart: 1 female at Demetree Park (*Orange*) 30 Jul (T. Rodriguez).
Cape May Warbler: 1 at Castaway Cove (*Indian River*) 2 Jun (W. Johnson).
Magnolia Warbler: 1 at Gulf Breeze 4 Jun (B. Duncan).
Yellow-breasted Chat: 1 at Lake Apopka Wildlife Drive 1 Jun-1 Jul (L. Mathis); 2 at Guana River WMA (*St. Johns*) 5 Jun (D. Reed); 1 at Buck Lake CA 18 Jun (G. Williams).
Lark Sparrow: 1 at Gulf Breeze 12 Jun (B. Duncan).
Bobolink: 1 at Sweetwater Wetlands Park 1 Jun (D. Segal, R. Rowan et al.); 3 at South Peninsula Drive (*Volusia*) 4 Jun (M. Brothers).
Yellow-headed Blackbird: 1 at Eglin AFB (*Okaloosa*) 23 Jul (J. Kennedy).
Orchard Oriole: 1 at Biolab Road (*Brevard*) 8 Jul (D. LaGrange).
Baltimore Oriole: 1 male at Lake Apopka Wildlife Drive 17 Jun (R. Harper).

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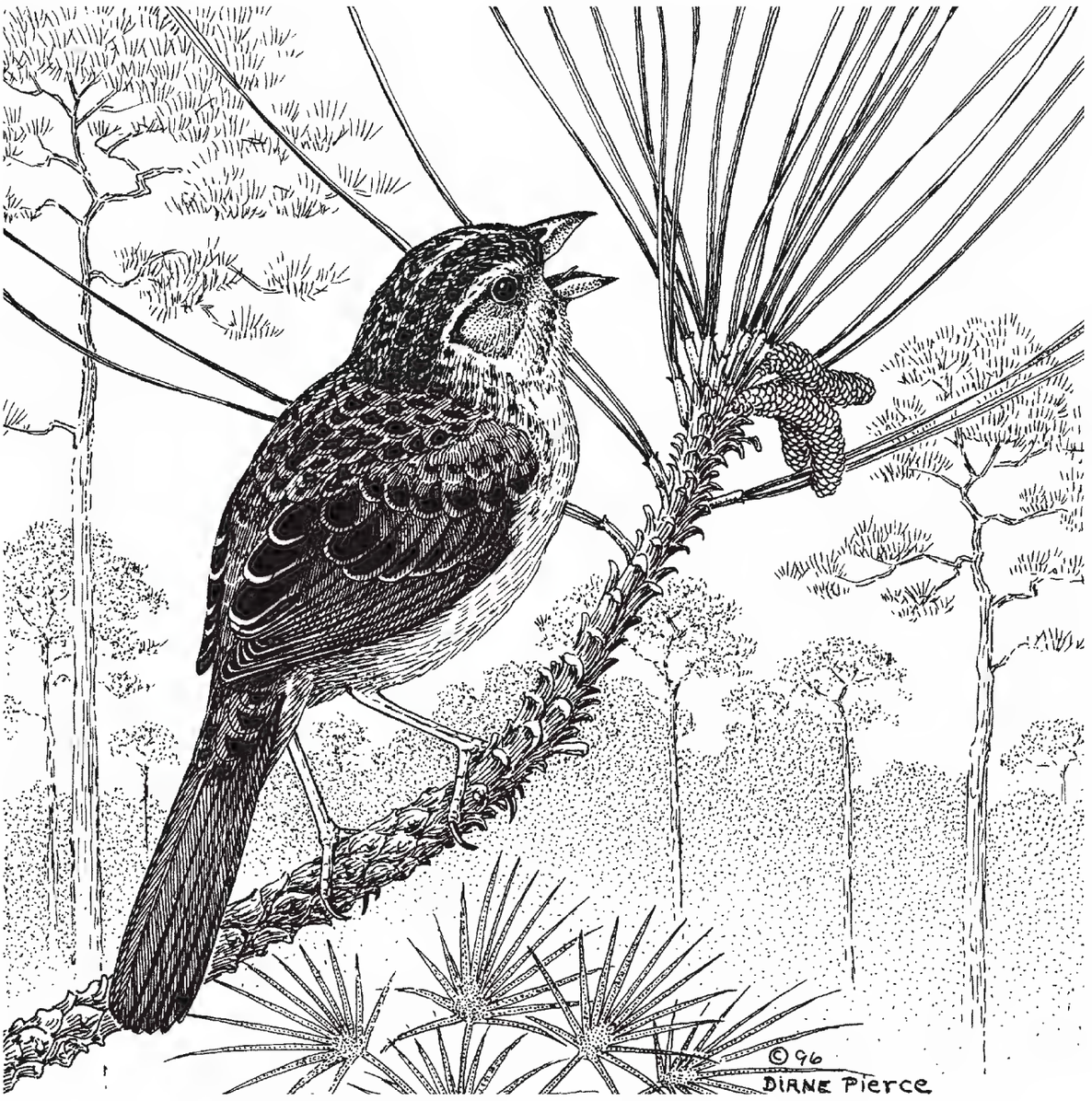

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DOES INTERTIDAL OYSTER REEF RESTORATION AFFECT AVIAN COMMUNITY STRUCTURE AND BEHAVIOR IN A SHALLOW ESTUARINE SYSTEM? A POST-RESTORATION ANALYSIS

MICHELLE SHAFFER[1], MELINDA DONNELLY, AND LINDA WALTERS
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Abstract.—As urbanization and human population growth continue to drive global habitat loss, restoration efforts are focused on returning ecosystem services to degraded habitats. While methods continue to evolve, some projects, such as Florida's Mosquito Lagoon intertidal oyster reef restoration, have had successes in restoring native foundation species such as the eastern oyster (*Crassostrea virginica*). Our study evaluates how these intertidal oyster reef restorations influence bird communities that depend on these reefs for food and resting locations. We conducted monthly observational bird surveys from September 2016 through August 2017 on 24 intertidal oyster reefs in Mosquito Lagoon. Observational bird surveys were conducted during morning low tides each month. During these surveys, six reef types (restored 2009, restored 2012, restored 2015, restored 2016, natural, and damaged), with four replicates of each type, were evaluated for species abundances, diversity, and behaviors. We additionally recorded abiotic variables (salinity, wind speed, air and water temperatures) at each site on each date. Our results did not show a significant difference in avian communities between reef type, species richness, or abiotic variables. However, frequency of foraging was significantly greater on natural and restored oyster reefs than damaged oyster reefs by birds that probe the sediment for prey. This research contributes to the growing body of knowledge on the effects of ecological restoration on avian communities, providing insight on the importance of habitat restoration to support bird species.

Key words: estuary, Mosquito Lagoon, oyster reef restoration, bird communities, bird behaviors, foraging, loafing

Habitat selection is an important process exhibited by coastal and wading bird species worldwide (e.g., Pierce and Gawlik 2010, Pickens and King 2014, Beerens et al. 2015, Brush et al. 2017,

Christensen-Dalsgaard et al. 2017). Mangrove stands, mudflats, salt marshes, kelp forests, and intertidal oyster reefs all provide resource opportunities for birds (e.g., Leopoldo and Collazo 1997, Olin et al. 2017, Piersma et al. 2017, Poli et al. 2017). These resources include locations for feeding, migratory stopovers, and breeding grounds (Christensen-Dalsgaard et al. 2017, Olin et al. 2017, Piersma et al. 2017, Poli et al. 2017). Coastal regions are also favored by humans for their economic and aesthetic values. Estuaries are affected by urbanization and human population growth, which results in habitat degradation and habitat loss (McKinney and Raposa 2012, Polidoro et al. 2017). Globally, the loss of wetland habitat during the twentieth century is between 64% and 71% compared to the total wetland area present in 1900 AD (Davidson 2014). Oyster reefs have also declined and Beck et al. (2011) estimated 85% of shellfish reefs have been lost globally over the past century.

The loss of oyster reefs has many negative implications for the ecology and economy surrounding these systems. Oyster reefs provide many ecosystem services including water filtration, sequestration of suspended biomass and nutrients, stabilization of adjacent shorelines and habitats, and provision of habitat for foraging marine species (Grabowski and Peterson 2007, Grabowski et al 2012, Chambers et al. 2018). For example, Grabowski et al. (2012) explains that the interception of suspended particles by an oyster reef increases the transfer of energy among trophic levels, transferring energy through the bottom-feeding crustaceans all the way up to apex predators, such as birds. Therefore, restoration has been conducted on a global scale to help restore these ecosystem services.

Restoration aims to return degraded habitats from either human or natural disturbances to previous conditions (e.g., Burdick et al. 1997, Bastyan and Cambridge 2008, Garvis et al. 2015, Kerr et al. 2016). While methods of ecological restoration continue to evolve, many projects have already returned degraded habitats into areas where birds can once again thrive. The San Francisco estuary marsh grass project, Western Australia's Oyster Harbour seagrass transplant project, National Estuarine Research Reserve System (NERRS) tidal wetland restoration projects, and Florida's Mosquito Lagoon intertidal oyster reef restoration project are all successful examples of long-term coastal restoration (Bastyan and Cambridge 2008, Garvis et al. 2015, Kerr et al. 2016, Raposa et al. 2017). Resident and migrant bird species depend on these habitats for nesting, roosting, and foraging. This is especially true in Florida, which is situated along the Atlantic flyway, a primary route for migratory birds and seasonal nesters (Audubon 2018). Florida's thriving ecotourism is also dependent upon wildlife viewing; approximately

2.7 billion dollars is spent annually on wildlife viewing in Florida, with 57% of that generated from birders (Anonymous 2013).

Along the central east coast of Florida, Mosquito Lagoon (ML) has experienced many anthropogenic stressors over the last two decades, including mosquito ditching, septic tank failures, runoff, and habitat loss through filling and seawall construction (Brockmeyer et al. 1996, Kleppel et al. 1996, Nielsen et al. 2000, Provancha and Scheidt 2000). Live intertidal oyster (*Crassostrea virginica*) reef acreage in Canaveral National Seashore declined 40% between 1943 and 2009 (Garvis et al. 2015). Simultaneously, damaged reefs became apparent along all major boating channels in ML (Grizzle et al. 2002). Damaged reefs begin as piles of disarticulated shell on the seaward edge of reefs, formed by recreational boat wakes removing sediment around the bases of live oyster clusters until nothing remains to hold them in place (Campbell 2015, Manis et al. 2015). The loose clusters are then moved above the mean high water line in this microtidal system by additional large wakes. These oysters soon perish due to lack of water for filter-feeding (Walters et al. 2007). The main goal of oyster reef restoration in ML is to restore these damaged oyster reefs back to their historical live footprint (Barber et al. 2010). This is done by leveling the damaged portion of the oyster reef and installing stabilized shell on top of the reef, forming a "carpet" of benthos substrate for oyster spat settlement. Since 2007, 89 oyster reefs have been restored, resulting in over three acres of oyster restoration (L. Walters unpublished data).

Research is limited on how coastal habitat restoration, especially intertidal oyster reef restoration, affects coastal Florida bird communities. Coastal birds use intertidal oyster reefs for foraging and loafing, because these oyster reefs can provide a variety of avian food sources, including *C. virginica* itself. Infauna and macrofauna living on or near reefs are also available to foraging birds; abundant species include pinfish (*Lagodon rhombiodes*), grass shrimp (*Palaemonetes spp.*), and mud crabs (Panopeidae) (Frederick et al. 2016, Gain et al. 2017). In one Florida study, Frederick et al. (2016) found that 49% of bird observations at intertidal oyster reefs in Florida's Big Bend region occurred on restored oyster reefs. However, the study by Frederick et al. (2016) evaluated oyster reefs restored at a single time, rather than over a temporal range. Our study aims to answer the following questions over eight years of oyster restoration in ML: 1) What is the diversity and abundance of birds observed at restored, natural, and damaged intertidal oyster reefs?, 2) How does the age of a restored oyster reef affect avian community structure?, and 3) What behaviors are birds exhibiting on each reef type?

Methods

Study site

Bird surveys were conducted on intertidal oyster reefs along the east coast of central Florida, within the Indian River Lagoon system (IRL) (Fig. 1). The IRL is approximately 250 km^2 in area with three major inlets (Smith 1993). The IRL system is biologically diverse with over 3,500 plant and animal species (Anonymous 2014); in particular, the IRL plus neighboring St. Johns River marshes represent 25% of Florida's breeding wading bird populations (Schikorr and Swain 1995). Three distinct estuaries make up the IRL system, from north to south: 1) Mosquito Lagoon (ML), 2) Indian River, and 3) Banana River. All bird surveys were conducted in Mosquito Lagoon. Mosquito Lagoon is made up of a mosaic of 10 distinct but connected estuarine habitats, including wetlands, oyster reefs, seagrass beds, and mudflats. Within Mosquito Lagoon, there are at least seven state-designated threatened avian species and one federally-designated threatened avian species as of 2017, including the Roseate Spoonbill (*Platalea ajaja,* ST), Reddish Egret (*Egretta rufescens,* ST), American Oystercatcher (*Haematopus palliatus,* ST), and Wood Stork (*Mycteria americana,* FT) (ST = state-designated threatened species; FT = federally-designated threatened species) (Florida Fish and Wildlife Conservation Commission 2017).

Salinity in ML ranges from 18 to 45 parts per thousand, while water temperatures range annually from 16.1 to 31.1 °C (Boudreaux et al. 2006, Barber et al. 2010). The mean water depth in ML is 1.7 m, with microtidal patterns that vary seasonally (Smith 1993). Wind has the most influence on currents within this system, with minimal influence from tidal currents (Smith 1987, Manis et al. 2015). During the fall and early winter months, generally August through February, the mean water level in ML is approximately 25 cm higher than the mean water level during spring and summer months (Smith 1986). This is known as the "high water season."

Oyster reef bird surveys

Bird surveys were conducted monthly on 24 oyster reefs in ML for 12 months, between September 2016 and August 2017 (Fig. 1). Three reef types surveyed were: 1) restored oyster reefs, 2) damaged reefs, and 3) natural reefs. The same restoration methods were used across all restored oyster reefs over the eight-year time span. The restored oyster reefs were divided into four classes: 2009, 2012, 2015, and 2016 based on year of restoration (Table 1). This allowed us to consider reef age as a factor of habitat selection, as it takes time for oyster settlement and growth as well as development of faunal communities. Each reef type had four replicates (Table 1).

Bird surveys were conducted monthly over two consecutive days for all 24 reefs. Surveys were done within two hours of predicted morning low tides (NOAA tide tables) in order to optimize the detection probability of birds using the oyster reefs (Schikorr and Swain 1995, Conway 2011). Surveys were conducted with Nikon Monarch™ 10x 42 binoculars at a minimum distance of 30 m. Survey design for each reef included four one-minute scan samples, during which the abundance and species of each bird present on or flying over a reef or reef segment was recorded. Following each scan sample were four-minute focal observations. For each focal sample, the abundance, species, and behaviors (foraging, loafing, flying) were observed for all birds present. This study defines foraging as actively seeking prey on an observed oyster reef, loafing as resting or preening on an observed oyster reefs, and flying as flying directly over an observed oyster reef without landing. Bird observations were recorded on each reef for 20 minutes on each monitoring day for a total of 240 minutes per reef over the course of this study.

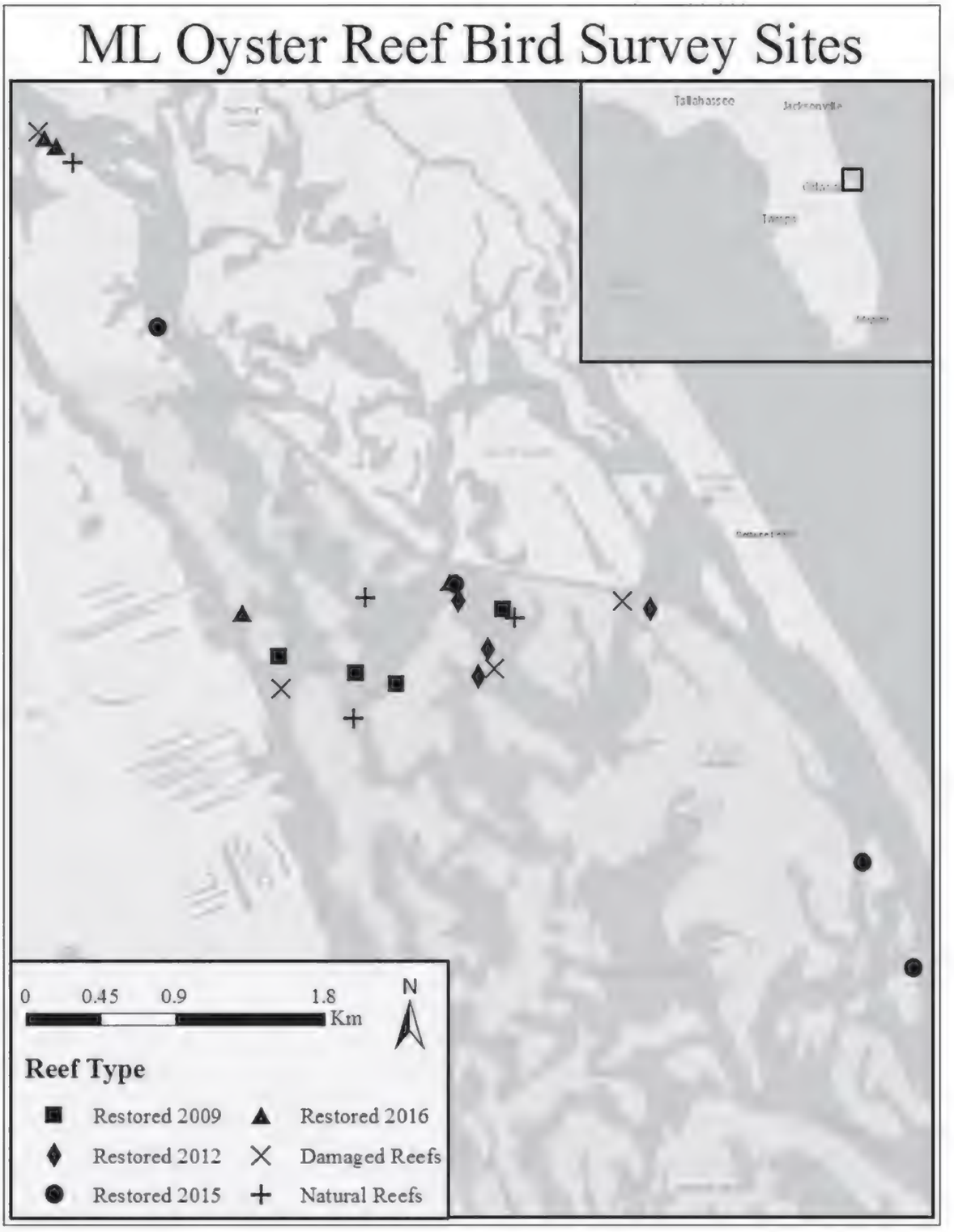

Figure 1. Locations of intertidal oyster reefs in Mosquito Lagoon, Florida where bird surveys were conducted.

Abiotic data were collected from the boat during each monthly survey and included: 1) water salinity (Extech™ portable refractometer), 2) three-minute measurement of average wind speed (Kestrel 3000™ wind gauge), and 3) water and air temperatures (Hach™ protected field thermometer). Seasonal water and weather conditions were also recorded, such as reefs completely submerged at low tide during the annual fall "high water season" in ML (Smith 1986, Stolen et al. 2009).

Table 1. Mosquito Lagoon oyster reefs surveyed during this study. This table includes data for all 24 of the surveyed reefs by reef type, years since restoration, area in square meters, and oyster density as count per m². Age for restored reefs were determined by time since restoration. Age for natural reefs were determined by 26-year old aerial photography of each reef (e.g. 26 + years old for natural reefs).

Reef Name	Year of Restoration	Reef Age (yrs.)	Reef Area (m^2)	Oyster Density (count/m^2)
Restored 1	2009	8	160	134.47
Restored 2	2009	8	50	36.50
Restored 3	2009	8	80	96.27
Restored 4	2009	8	50	144.97
Restored 5	2012	5	128	38.97
Restored 6	2012	5	275	49.17
Restored 7	2012	5	20	115.60
Restored 8	2012	5	100	77.53
Restored 9	2015	2	100	103.63
Restored 10	2015	2	180	110.73
Restored 11	2015	2	450	123.67
Restored 12	2015	2	125	58.67
Restored 13	2016	1	100	103.07
Restored 14	2016	1	141	86.83
Restored 15	2016	1	70	33.23
Restored 16	2016	1	485	57.27
Natural 1	N/A	26 +	1390	301.20
Natural 2	N/A	26 +	503	120.40
Natural 3	N/A	26 +	4652	184.20
Natural 4	N/A	26 +	635	80.00
Damaged 1	N/A	0	217	1.40
Damaged 2	N/A	0	835	0.40
Damaged 3	N/A	0	141	10.40
Damaged 4	N/A	0	642	0.40

NMS community structure analyses

We compared community structure between reef types using nonmetric multidimensional analysis (NMS) in PC-ORD. NMS is an ordination technique designed to visualize the level of similarity of individual cases for a dataset with all pairwise distances among points compared. NMS differs from other ordination methods in that there are no hidden axes of variation, does not produce a unique solution but rather a "most acceptable" solution, and does not make assumptions about the nature of the data, making it suitable for a wide variety of data sets. Data is analyzed in a primary and secondary data matrix and can be analyzed with any distance measure (in this case Sorenson distance measure). The primary data matrix included the total number of observations of each bird species for individual reefs observed during all monthly surveys. Observed bird species with a total number of observations of less than five for all reef types were excluded from the NMS analysis (Table 2).

The primary matrix included species observed loafing, foraging, and flying over the reef during surveys in order to represent all birds potentially utilizing oyster habitats based on proximity to the reef. In addition, we wanted to evaluate if community struc-

Table 2. Bird species observed during surveys by reef type. Numbers per species at each reef type: the top number is relative abundance, the middle number is foraging frequency, and the third number is loafing frequency. Relative abundance includes flying; flying frequency is not included separately. Primary foraging style for each species is included, and a total abundance count is found at the bottom of the table. Any species with < five abundance count is annotated with an asterisk. All frequencies are rounded to the thousandths.

Species			Relative Abundance, Foraging, and Loafing					
English Name	Scientific Name	Foraging Style	Restored 2009	Restored 2012	Restored 2015	Restored 2016	Natural	Damaged
American Oystercatcher	*Haematopus palliatus*	Prober	0.000	0.007	0.009	0.000	0.038	0.024
			0.000	1.000	1.000	0.000	1.000	0.286
(n = 15)			0.000	0.000	0.000	0.000	0.000	0.714
Bald Eagle	*Haliaeetus leucocephalus*	Soaring	0.000	0.007	0.000	0.011	0.000	0.010
			0.000	0.000	0.000	0.000	0.000	0.000
(n = 5)			0.000	0.000	0.000	0.000	0.000	0.000
Belted Kingfisher	*Megaceryle alcyon*	Aerial Diver	0.000	0.026	0.009	0.011	0.006	0.000
			0.000	0.000	0.000	0.000	0.000	0.000
(n = 7)			0.000	0.250	0.000	0.000	0.000	0.000
Black-bellied Plover	*Pluvialis squatarola*	Ground Forager	0.000	0.033	0.000	0.000	0.000	0.003
			0.000	0.000	0.000	0.000	0.000	0.000
(n = 6)			0.000	1.000	0.000	0.000	0.000	1.000
*Black Skimmer	*Rynchops niger*	Aerial Forager	0.000	0.000	0.000	0.000	0.000	0.014
			0.000	0.000	0.000	0.000	0.000	0.000
(n = 4)			0.000	0.000	0.000	0.000	0.000	0.000
*Black Vulture	*Coragyps atratus*	Soaring	0.000	0.000	0.000	0.000	0.006	0.000
			0.000	0.000	0.000	0.000	0.000	0.000
(n = 1)			0.000	0.000	0.000	0.000	0.000	0.000
Brown Pelican	*Pelecanus occidentalis*	Aerial Diver	0.054	0.118	0.053	0.125	0.056	0.083
			0.250	0.000	0.000	0.000	0.000	0.000
(n = 72)			0.000	0.944	0.167	0.000	0.333	0.625

Table 2. (Continued) Bird species observed during surveys by reef type. Numbers per species at each reef type: the top number is relative abundance, the middle number is foraging frequency, and the third number is loafing frequency. Relative abundance includes flying; flying frequency is not included separately. Primary foraging style for each species is included, and a total abundance count is found at the bottom of the table. Any species with < five abundance count is annotated with an asterisk. All frequencies are rounded to the thousandths.

Species			Relative Abundance, Foraging, and Loafing					
English Name	Scientific Name	Foraging Style	Restored 2009	Restored 2012	Restored 2015	Restored 2016	Natural	Damaged
Caspian Tern	*Hydroprogne caspia*	Aerial Diver	0.000	0.013	0.062	0.034	0.006	0.010
(n = 16)			0.000	0.000	0.000	0.000	0.000	0.000
			0.000	0.000	0.000	0.000	0.000	0.333
Double-crested Cormorant	*Phalacrocorax auritus*	Surface Diver	0.027	0.020	0.027	0.046	0.050	0.059
(n = 37)			0.000	0.000	0.000	0.000	0.000	0.000
			0.500	0.333	0.667	0.000	0.625	0.882
Fish Crow	*Corvus ossifragus*	Ground Forager	0.000	0.000	0.000	0.068	0.025	0.000
(n = 10)			0.000	0.000	0.000	0.000	0.000	0.000
			0.000	0.000	0.000	1.000	0.000	0.000
Forster's Tern	*Sterna forsteri*	Aerial Diver	0.014	0.033	0.071	0.000	0.006	0.007
(n = 17)			0.000	0.000	1.000	0.000	0.000	0.000
			1.000	0.000	0.000	0.000	0.000	0.500
Great Blue Heron	*Ardea herodias*	Stalker	0.027	0.013	0.000	0.011	0.019	0.010
(n = 11)			0.000	0.000	0.000	0.000	0.333	0.000
			0.000	1.000	0.000	0.000	0.000	1.000
Great Egret	*Ardea alba*	Stalker	0.068	0.013	0.018	0.011	0.056	0.010
(n = 22)			0.600	1.000	0.000	0.000	0.000	0.000
			0.000	0.000	0.000	0.000	0.000	0.000
Green Heron	*Butorides virescens*	Stalker	0.000	0.000	0.018	0.057	0.013	0.000
(n = 9)			0.000	0.000	0.000	0.200	0.000	0.000
			0.000	0.000	1.000	0.200	0.000	0.000

Table 2. (Continued) Bird species observed during surveys by reef type. Numbers per species at each reef type: the top number is relative abundance, the middle number is foraging frequency, and the third number is loafing frequency. Relative abundance includes flying; flying frequency is not included separately. Primary foraging style for each species is included, and a total abundance count is found at the bottom of the table. Any species with < five abundance count is annotated with an asterisk. All frequencies are rounded to the thousandths.

Species			Relative Abundance, Foraging, and Loafing					
English Name	Scientific Name	Foraging Style	Restored 2009	Restored 2012	Restored 2015	Restored 2016	Natural	Damaged
Herring Gull	*Larus argentatus*	Ground Forager	0.014	0.033	0.035	0.034	0.044	0.014
(n = 24)			0.000	0.200	0.000	0.000	0.000	0.000
			0.000	0.600	0.250	0.667	0.714	0.750
*Hooded Merganser	*Lophodytes cucullatus*	Surface Diver	0.027	0.000	0.000	0.000	0.000	0.000
(n = 2)			1.000	0.000	0.000	0.000	0.000	0.000
			0.000	0.000	0.000	0.000	0.000	0.000
Killdeer	*Charadrius vociferus*	Ground Forager	0.000	0.000	0.044	0.000	0.013	0.007
(n = 9)			0.000	0.000	0.000	0.000	1.000	0.000
			0.000	0.000	0.000	0.000	0.000	1.000
Laughing Gull	*Leucophaeus atricilla*	Ground Forager	0.122	0.190	0.100	0.102	0.106	0.388
(n = 187)			0.000	0.000	0.091	0.000	0.058	0.000
			0.111	0.793	0.000	0.000	0.471	0.964
Least Tern	*Sternula antillarum*	Aerial Diver	0.000	0.026	0.018	0.000	0.000	0.007
(n = 8)			0.000	0.500	0.000	0.000	0.000	0.000
			0.000	0.000	0.000	0.000	0.000	0.000
Little Blue Heron	*Egretta caerulea*	Stalker	0.000	0.007	0.009	0.011	0.019	0.000
(n = 6)			0.000	0.000	0.000	0.000	0.667	0.000
			0.000	0.000	0.000	0.000	0.333	0.000
*Mourning Dove	*Zenaida macroura*	Ground Forager	0.000	0.000	0.000	0.000	0.013	0.000
(n = 3)			0.000	0.000	0.000	0.000	0.000	0.000
			0.000	0.000	0.000	0.000	0.000	0.000

Table 2. (Continued) Bird species observed during surveys by reef type. Numbers per species at each reef type: the top number is relative abundance, the middle number is foraging frequency, and the third number is loafing frequency. Relative abundance includes flying; flying frequency is not included separately. Primary foraging style for each species is included, and a total abundance count is found at the bottom of the table. Any species with < five abundance count is annotated with an asterisk. All frequencies are rounded to the thousandths.

Species			Relative Abundance, Foraging, and Loafing					
English Name	Scientific Name	Foraging Style	Restored 2009	Restored 2012	Restored 2015	Restored 2016	Natural	Damaged
Osprey	*Pandion haliaetus*	Aerial Diver	0.162	0.033	0.100	0.034	0.156	0.028
(n = 64)			0.417	0.200	0.182	0.000	0.320	0.500
			0.500	0.400	0.091	0.333	0.200	0.000
Red-breasted Merganser	*Mergus serrator*	Surface Diver	0.014	0.013	0.000	0.000	0.031	0.000
(n = 8)			0.000	0.500	0.000	0.000	0.000	0.000
			0.000	0.000	0.000	0.000	0.000	0.000
*Reddish Egret	*Egretta rufescens*	Stalker	0.000	0.000	0.009	0.011	0.000	0.000
(n = 2)			0.000	0.000	1.000	0.000	0.000	0.000
			0.000	0.000	0.000	1.000	0.000	0.000
Red-winged Blackbird	*Agelaius phoeniceus*	Ground forager	0.041	0.026	0.053	0.091	0.019	0.000
(n = 24)			0.000	0.000	0.000	0.000	0.000	0.000
			0.000	0.000	0.000	0.000	0.000	0.000
Ring-billed Gull	*Larus delawarensis*	Ground Forager	0.027	0.007	0.018	0.000	0.025	0.017
(n = 14)			0.000	0.000	0.500	0.000	0.000	0.000
			0.000	1.000	0.000	0.000	0.500	1.000
*Roseate Spoonbill	*Platalea ajaja*	Sifter	0.014	0.000	0.000	0.000	0.000	0.000
(n = 1)			0.000	0.000	0.000	0.000	0.000	0.000
			0.000	0.000	0.000	0.000	0.000	0.000
Royal Tern	*Thalasseus maximus*	Aerial Diver	0.054	0.105	0.027	0.023	0.006	0.156
(n = 71)			0.250	0.313	0.000	0.000	1.000	0.044
			0.250	0.563	0.333	0.000	0.000	0.889

Table 2. (Continued) Bird species observed during surveys by reef type. Numbers per species at each reef type: the top number is relative abundance, the middle number is foraging frequency, and the third number is loafing frequency. Relative abundance includes flying; flying frequency is not included separately. Primary foraging style for each species is included, and a total abundance count is found at the bottom of the table. Any species with < five abundance count is annotated with an asterisk. All frequencies are rounded to the thousandths.

Species			Relative Abundance, Foraging, and Loafing					
English Name	Scientific Name	Foraging Style	Restored 2009	Restored 2012	Restored 2015	Restored 2016	Natural	Damaged
Ruddy Turnstone	*Arenaria interpres*	Ground Forager	0.014	0.007	0.000	0.011	0.000	0.069
(n = 23)			0.000	1.000	0.000	0.000	0.000	0.950
			1.000	0.000	0.000	1.000	0.000	0.050
Sanderling	*Calidris alba*	Prober	0.000	0.000	0.009	0.011	0.013	0.007
(n = 6)			0.000	0.000	1.000	1.000	1.000	0.000
			0.000	0.000	0.000	0.000	0.000	0.000
*Semipalmated Plover	*Charadrius semipalmatus*	Ground Forager	0.000	0.007	0.000	0.000	0.000	0.000
(n = 1)			0.000	0.000	0.000	0.000	0.000	0.000
			0.000	1.000	0.000	0.000	0.000	0.000
Snowy Egret	*Egretta thula*	Stalker	0.014	0.033	0.027	0.034	0.031	0.000
(n = 17)			1.000	0.400	0.000	0.000	0.800	0.000
			0.000	0.000	0.000	0.333	0.200	0.000
*Spotted Sandpiper	*Actitis macularius*	Prober	0.000	0.000	0.000	0.011	0.000	0.000
(n = 1)			0.000	0.000	0.000	1.000	0.000	0.000
			0.000	0.000	0.000	0.000	0.000	0.000
Tree Swallow	*Tachycineta bicolor*	Aerial Forager	0.068	0.013	0.009	0.000	0.013	0.000
(n = 10)			0.000	0.000	0.000	0.000	0.000	0.000
			0.000	0.000	0.000	0.000	0.000	0.000
Tricolored Heron	*Egretta tricolor*	Stalker	0.068	0.007	0.009	0.023	0.000	0.000
(n = 9)			0.000	0.000	0.000	0.000	0.000	0.000
			0.000	0.000	0.000	0.000	0.000	0.000

Table 2. (Continued) Bird species observed during surveys by reef type. Numbers per species at each reef type: the top number is relative abundance, the middle number is foraging frequency, and the third number is loafing frequency. Relative abundance includes flying; flying frequency is not included separately. Primary foraging style for each species is included, and a total abundance count is found at the bottom of the table. Any species with < five abundance count is annotated with an asterisk. All frequencies are rounded to the thousandths.

Species			Relative Abundance, Foraging, and Loafing					
English Name	Scientific Name	Foraging Style	Restored 2009	Restored 2012	Restored 2015	Restored 2016	Natural	Damaged
Turkey Vulture	*Cathartes aura*	Soaring	0.014	0.013	0.000	0.000	0.006	0.007
(n = 6)			0.000	0.000	0.000	0.000	0.000	0.000
			0.000	0.000	0.000	0.000	0.000	0.000
White Ibis	*Eudocimus albus*	Prober	0.108	0.065	0.133	0.171	0.088	0.017
(n = 67)			0.750	0.267	0.667	0.467	0.857	0.000
			0.000	0.400	0.000	0.000	0.000	0.400
Willet	*Tringa semipalmata*	Prober	0.041	0.137	0.133	0.057	0.113	0.045
(n = 75)			1.000	0.619	0.800	1.000	0.777	0.154
			0.000	0.238	0.200	0.000	0.056	0.846
*Wilson's Plover	*Charadrius wilsonia*	Prober	0.000	0.000	0.000	0.000	0.006	0.007
(n = 3)			0.000	0.000	0.000	0.000	0.000	0.000
			0.000	0.000	0.000	0.000	1.000	1.000
*Wood Stork	*Mycteria americana*	Prober	0.000	0.000	0.000	0.000	0.019	0.000
(n = 1)			0.000	0.000	0.000	0.000	0.000	0.000
			0.000	0.000	0.000	0.000	0.000	0.000
*Yellow-crowned Night	*Nyctanassa violacea*	Stalker	0.014	0.000	0.000	0.000	0.000	0.000
heron			1.000	0.000	0.000	0.000	0.000	0.000
(n = 1)			0.000	0.000	0.000	0.000	0.000	.000
Total Abundance Count			74	153	113	88	160	289

ture differences between reefs was due to differences in species availability at each location rather than habitat selection by the species. The secondary data matrix included the following variables for each reef: 1) reef type, 2) age of reef, 3) reef area, and 4) mean oyster density. Age of reef was determined from the date of oyster reef restoration or the formation of damaged oyster reefs from historical ML maps in ArcGIS (Table 1). Age of natural reefs were considered to be at least as old as the latest maps in ArcGIS (Table 1). Reef area was calculated as total meters squared of restored reef and total area of damaged or natural reef in ArcGIS (Table 1). Mean oyster density was determined by yearly collection of live oyster count data within thirty 0.25 m^2 quadrats on all reefs (Table 1).

Initial analysis used Sorenson (Bray-Curtis) distance measure and 250 runs of real and randomized data with random starting configurations. Stress values were evaluated using guidelines in McCune and Grace (2002, pp. 125-142), with stress values between 10-20 considered common for ecological data and values >20 considered a poor fit for the data. Final configuration was based on a two-dimensional solution and starting configuration from the initial analysis. Correlation coefficients (tau) for each axis were evaluated to identify species and second matrix variables influencing the distribution of communities in the NMS plot. A perMANOVA was conducted to compare similarity of sites based on reef type. A rank-abundance curve was created for each reef type to show species richness (number of species observed) and species evenness (relative abundance of species) utilized in the NMS analysis of the avian communities.

Behavioral analyses

Birds in direct contact with oyster reefs exhibited two primary behaviors, loafing and foraging. To compare frequencies of foraging and loafing between reef types, we calculated the proportion of observed foraging and loafing behaviors for each reef for all species combined. Differences in proportion of foraging behaviors observed at restored and damaged reef types compared to natural reefs was conducted using analysis of deviance for proportion data with quasi-binomial distribution (R Core Team 2017). Observed species with a total abundance between all reef types of less than five were excluded from the behavioral analyses.

Results

Abundance and diversity

In total, we observed 877 birds, representing 41 species, at all oyster reef types in ML: 74 birds at reefs restored in 2009, 153 at reefs restored in 2012, 113 at reefs restored in 2015, 88 at reefs restored in 2016, 160 at natural reefs, and 289 at damaged reefs (Table 2). The two-dimensional NMS plot of bird communities (Fig. 2a) had a final stress of 16.8 and final instability of less than 0.0001. This stress value is considered "fair" for ecological data (McCune and Grace 2002, pp. 125-142) and the rank-abundance curves are included to provide additional evaluation of the community structure.

Spatially, there was overlap in all reef types and there was no significant variation between reef type (Fig. 2a; perMANOVA $p = 0.074$). In the NMS plot (Fig. 2a), the distribution of communities was most strongly correlated with commonly observed species. Axis one was negatively correlated with Willets (*Tringa semipalmata*; tau=

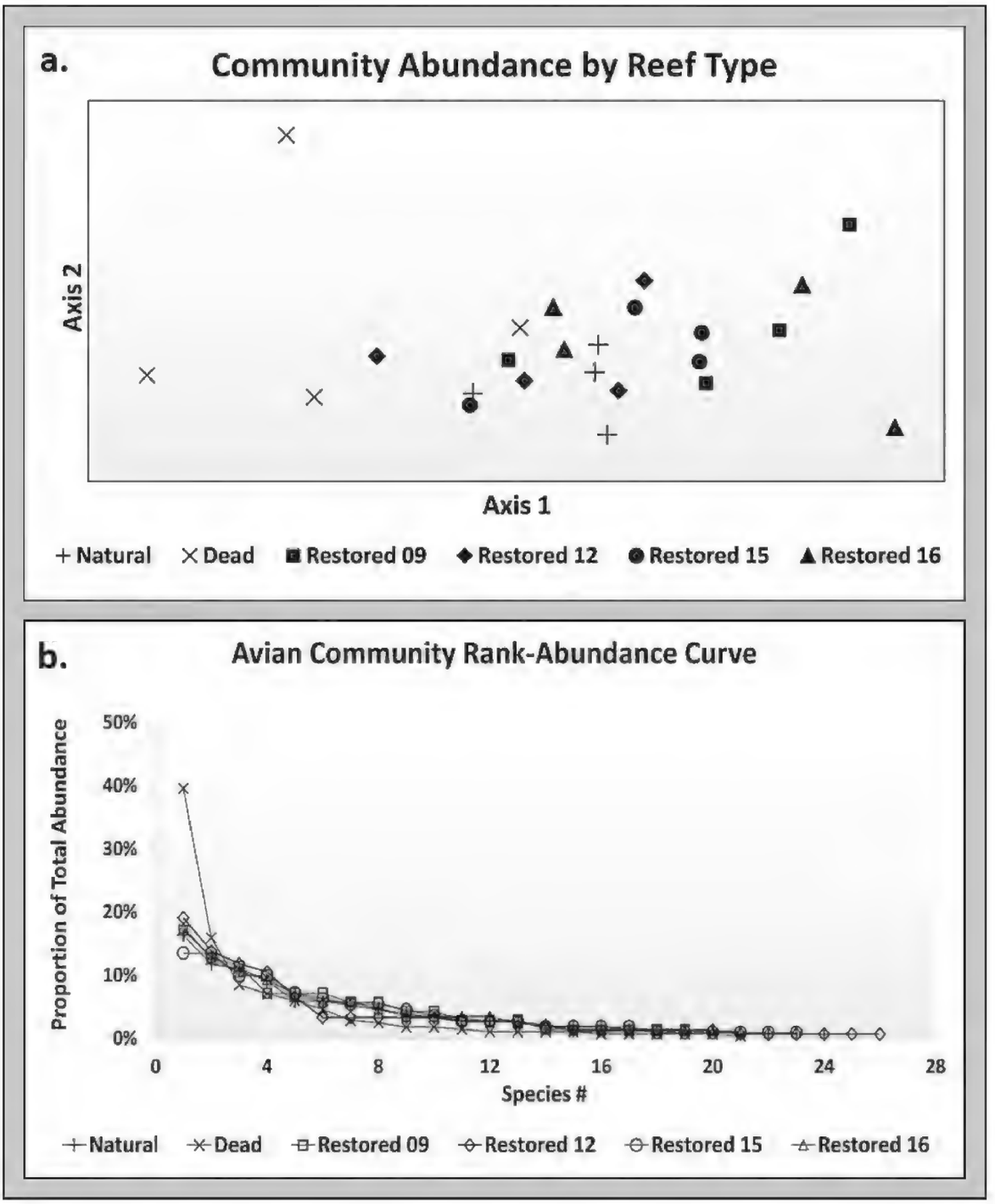

Figure 2. a) Non-metric multidimensional scaling plot of community structure comparing natural, damaged, and restored reefs (final stress: 16.82; instability: 0.00; perMANOVA [reef type: p = 0.074]. b) Rank-abundance curve for proportion of total abundance in avian community with proportions of total abundance between reef types natural, damaged, and restored with year class included.

-0.55) and Brown Pelicans (*Pelecanus occidentalis*; tau= -0.63). Willets were commonly observed on natural reefs and Brown Pelicans were commonly observed on damaged reefs. Variations in abundances of these two species helps to explain the distribution of sites along axis one in the NMS plot. Axis two was negatively correlated with Laughing

Gulls (*Leucophaeus atricilla*; tau= -0.41) and American Oystercatchers (tau= -0.49), with both of these species observed primarily on damaged and natural reefs. Variation in communities of individual sites was also negatively correlated with reef area (tau= -0.34) along axis one and axis two, and was negatively correlated with oyster density (tau= -0.24).

Oyster reefs used in this study varied in area, influencing the available space for bird usage (Table 1). Mean oyster densities per 0.25 m^2 (± SE) on restored reefs was 85.6 ± 9.1, 171.4 ± 48.2 on natural reefs, and 3.1 ± 2.4 oysters on damaged reefs (Table 1). Thus, differences in live oyster cover may have influenced habitat selection of species searching for food resources (greater on natural and restored reefs) or area for loafing (greater on damaged reefs).

Excluding the species less than five in abundance, the combined species richness at restored reefs was 30, at natural reefs was 25, and at damaged reefs was 21 (Table 2). Comparing all six reef types (natural, damaged, restored 2009, restored 2012, restored 2015, restored 2016), species richness was highest at the 2012 restored reefs (n = 26) and lowest at the 2009 restored reefs (n = 19) (Table 2).

The rank-abundance curve (Fig. 2b) shows that avian communities on damaged reefs had less species evenness than restored and natural reefs, with five species (Laughing Gulls; Royal Terns, *Thalasseus maximus*; Brown Pelicans; Ruddy Turnstones, *Arenaria interpres*; and Double-Crested Cormorants, *Phalacrocorax auritus*) dominating the community and making up 77% of the total relative abundance of 21 total species on damaged reefs (Fig. 2b; Table 2). The remaining 16 species found on damaged reefs were in very low abundance, resulting in a steep, L-shaped curve (Fig. 2b). The natural and restored reef avian communities' curves were similar to each other in slope and species abundances were more evenly distributed among all species in the community, resulting in low-sloping curves. On natural reefs, the five most abundant species (Ospreys, *Pandion haliaetus*; Willets; Laughing Gulls; White Ibis, *Eudocimus albus*; and Great Egrets, Ardea alba) were 54.2% of the total relative abundance of 25 total species. All year classes within the restored reefs were similar to natural reef communities, with the five most common species accounting for between 54.1% and 61.8% of total relative abundance of between 19 and 26 total species (Fig. 2b; Table 2).

Behaviors

Out of 41 total species observed at one or more of the three reef types (including those < five in abundance), 31 species used at least one of the reef types for foraging or loafing, while the remaining species were observed in flyovers only (Table 2). Ten species observed flying

over reefs included species not typically associated with oyster reefs as part of their ecological niche, such as Red-winged Blackbirds (*Agelaius phoeniceus*) and Tree Swallows (*Tachycineta bicolor*), as well as some species that occasionally land on oyster reefs (e.g. Osprey). Natural and restored reefs had higher foraging rates than damaged reefs, whereas birds using damaged reefs were observed primarily loafing (Fig. 3a). Mean percentage of foraging (± SE) on natural reefs was 70.0 ± 8.5% of behaviors and was not significantly different from foraging on restored reefs (64.9 ± 8.3%; $p = 0.32$) (Fig. 3a). Mean percentage of foraging on damaged reefs was 6.6 ± 4.2%; this was significantly lower than foraging on natural reefs ($p < 0.001$; Fig. 3a). Natural and restored reefs were dominated by birds probing the sediment, while damaged reefs were dominated by ground-foraging birds (Fig. 3b). On natural reefs, 62.3% of the birds foraged by means of sediment probing, with Willets and White Ibis as the dominant probers (Fig. 3b, Table 2). On restored reefs, 59% of the birds foraged by means of sediment probing by the same species as on natural reefs (Fig. 3b). On damaged reefs, the few observations of foraging were primarily ground-foraging by Laughing Gulls and Ruddy Turnstones (Fig. 3b, Table 2).

Discussion

The goal of this study was to compare avian community structure and foraging behavior between restored, damaged, and natural intertidal oyster reefs in Mosquito Lagoon to better understand ecosystem effects of restoration and the ecological drivers behind these patterns. We found that overall community structure was not distinct between reef types; however, restored and natural reef types were similar to each other and different from damaged reefs in species evenness and behaviors. We found the highest proportions of foraging behavior on natural and restored reefs, with more frequent observations of loafing behavior on damaged reefs. This suggests that restored reefs provide similar foraging opportunities as natural reefs, whereas foraging options for estuarine bird species were limited on damaged reefs. This is supported by the prevalence of probing for food on both natural and restored reefs compared to damaged reefs with observations of foraging primarily occurring by ground foragers. Combined, this suggests oyster reef restoration was successful in creating foraging habitat for estuarine birds in addition to increasing oyster numbers in ML.

After one year of surveying avian communities on ML intertidal oyster reefs, distinct differences in community structure between reef types were equivocal. Our community analysis included both birds flying over and directly using the reef for foraging or loafing to identify

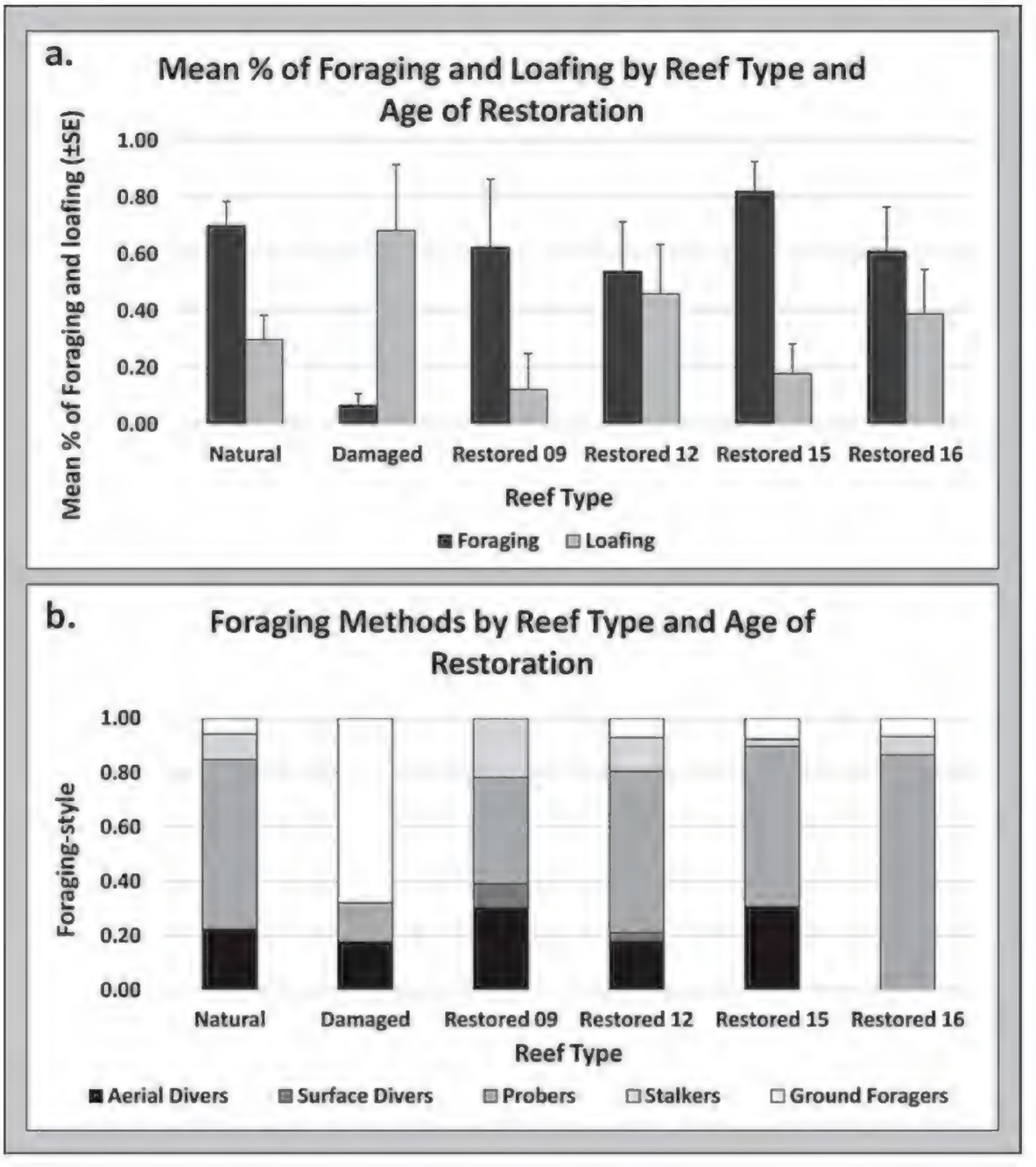

Figure 3. a) Proportion of foraging and loafing at each reef type for natural, damaged, and restored reefs with year class included. Significant difference between natural and damaged reefs ($p < 0.001$); no significant difference between natural and restored reefs ($p = 0.32$). b) Proportion of five foraging styles by reef type with year class included. The five styles are 1) aerial divers (dives from air into water for food), 2) surface divers (dives at surface of water into water column for food), 3) probers (probes into sediment for food), 4) stalkers (stalks prey on ground then attacks rapidly), and 5) ground foragers (sifts through ground debris for food).

all potential users of oyster reefs based on presence in the area. In ML, oyster reefs exist as one habitat within a mosaic of connecting habitats, including mangrove wetlands, seagrass beds, sand bars, and mudflats, with many bird species utilizing multiple habitats for

different purposes. It is difficult to determine if the similarities in bird communities are an artifact of this estuarine mosaic condition, or solely driven by the properties of the oyster reefs. Gain et al. (2017) found that habitat linkages in estuarine mosaics in Texas were a major driver of macrofauna communities on intertidal oyster reefs. Macrofaunal communities like those studied by Gain et al. (2017) provide food sources for avian communities in estuaries, potentially resulting in an indirect influence of habitat linkages on these avian communities. Viewing avian communities on a larger spatial scale within multiple habitat types may provide insight into the relation between habitat linkages and community structure in ML.

Large-scale habitat selection within the estuarine mosaics is also important to consider. Along the Big Bend coast of Florida, Frederick et al. (2016) found that avian communities frequently selected sand bars over intertidal oyster reefs during low tide. Our study observed avian communities on oyster reefs only during morning low tides, resulting in the availability of other adjacent habitat types, such as sandbars, for avian communities to utilize during these surveys. During these morning low tides, the main species foraging on natural reefs were probing species such as Willets and White Ibis. Our sampling design focusing only on morning low tides may have biased our observations towards birds preferring specific conditions and excluded species preferring other habitat types during low tides (Schikorr and Swain 1995). Furthermore, *Tringa semipalmata* was found to be a major driver of trends in axis one of the NMS, potentially due to this high rate of foraging during morning low tides. Evaluating bird abundance and behaviors over an entire tide cycle, and in comparison to other habitat types within the estuarine mosaic is needed to better understand bird habitat preferences under different environmental conditions.

Community effects are further influenced by traits of the dominant species (Hillebrand et al. 2008). The most common species on damaged reefs were Laughing Gulls and Brown Pelicans. Burger et al. (2007) found Laughing Gulls showed high levels of food aggression toward other shoreline birds. Since most Laughing Gulls on damaged reefs were not displaying foraging behaviors, these damaged reefs may function as resting areas while the Laughing Gulls wait for food opportunities in adjacent habitats. Schnell et al (1983) found that Laughing Gull kleptoparasitism on Brown Pelicans was extremely common during Brown Pelican foraging, and that Laughing Gull aggression increased during foraging events. Their aggressive behavior may potentially reduce the diversity and abundance of other species using this area for both loafing and foraging. In addition, aggressive species like the Laughing Gull may become strong food competitors on adjacent restored and natural oyster reefs, potentially impacting

bird utilization in neighboring habitats. To understand these potential consequences, more research is needed to evaluate species-specific interactions within bird communities.

Oyster reef restoration has been shown to restore ecosystem services lost with habitat degradation. Previous research documented that restored and natural oyster reefs support biogeochemical properties not found at damaged reefs, with several of these properties, such as sequestration of suspended biomass, increasing rapidly within one year of restoration (Chambers et al. 2018). In our study, age of reef was not a significant factor and suggests habitat use by birds begins soon after restoration occurs, potentially supported by the return of biogeochemical properties (Chambers et al. 2018). Restored and natural oyster reefs create a chemical environment that supports a thriving microbial community, coupling benthic and pelagic food webs (Chambers et al. 2018). We found foraging activity in avian communities to be highest at restored and natural oyster reefs, suggesting that the biogeochemical and structural properties of these oyster reefs may be providing a larger abundance and array of infaunal prey options (Harris 2018). This would also help explain the evenness found on restored and natural reefs, as a greater variety in food options would increase ecological niches and attract birds with a range of foraging styles.

The availability of a greater variety in benthic food sources on restored and natural oyster reefs is also supported by the avian foraging styles exhibited on these reefs. Of the birds observed foraging on these reefs, the most common avian species were those that probe the sediment for prey. These main probing species were Willets, White Ibis, and American Oystercatchers. This is significant as American Oystercatchers are listed as a species of high conservation concern in the U.S. Shorebird Conservation Plan (Brush et al. 2017). Restored and natural oyster reefs also attracted avian species such as Great Egrets and Snowy Egrets (*Egretta thula*) that must stalk their prey, including fishes and crabs. These stalker species were not observed foraging on or adjacent to damaged reefs, suggesting an inability of damaged oyster reefs to support a variety of food options or appropriate vantage points for stalking.

Reefs restored in 2016 did not have aerial divers foraging on them between September 2016 and August 2017. While the reasons for this were unclear, Gregalis et. al. (2009) found that responses by resident and transient fishes (the prey items of aerial divers) to oyster reef restoration in Mobile Bay, Alabama were highly variable due to location-specific biophysical characteristics. There may be similar location-specific biophysical characteristics in ML that are driving foraging site selection by aerial divers, something that was not evaluated in this

study. This may also be influenced by the methodology of our study, as bird surveys were conducted only during low tide when there is less water for aerial divers to forage in. Ruddy Turnstones were the dominant species observed foraging on damaged oyster reefs, as they are ground foragers that rely on prey items near the surface of foraging substrate. It is likely that the turnstones were foraging on terrestrial insects on the damaged reefs that are above mean high water.

Restored and natural reefs had higher species evenness than damaged reefs, with five species making up almost the entirety of the observations on damaged reefs. The Brown Pelican was one of these five common species on damaged reefs and strongly correlated with axis one in the NMS. This suggests that loafing by Brown Pelicans on damaged reefs occurred in such large numbers that it had a strong influence on the overall avian community structure found in the NMS. The effects of dominance of a few species within a community can impact species interactions, ecosystem processes, and ecosystem stability (Hillebrand et al. 2008). Low species evenness within a community has shown to decrease productivity and adaptability to new environmental constraints (Hillebrand et al. 2008). Higher bird diversity and evenness observed on natural and restored oyster reefs in ML supports the need for conservation and restoration of oyster reef habitat to increase resilience of bird communities with changing environments. Based on our observations at damaged reefs, continued loss and degradation of oyster reefs will limit available habitat and reduce the diversity and abundance of avian communities within ML. This is a major concern for the near future as coastal ecosystems experience a wide variety of anthropogenic and ecological pressures, including rising temperatures and sea levels from global climate change (Harley et al. 2006).

Our study provides evidence of similarities in avian communities using restored intertidal oyster reefs and natural reefs. Food options are likely a major driver of avian community structure on these reefs. Habitat linkages and habitat selection preferences on a larger spatial scale may be an important driver of observed patterns and future research. Results from this study provide information that supports environmental management plans designed to conserve Florida's unique coastal bird life and its associated prey communities. Overall, the variety of avian life on restored reefs in ML supports a positive connection between intertidal oyster reef restoration and avian communities, emphasizing the importance of habitat restoration for aquatic bird conservation.

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Literature Cited

Anonymous. 2014. The Indian River Lagoon species inventory. Smithsonian Marine Station, Ft. Pierce, Florida. Retrieved from <http://www.sms.si.edu>.

Anonymous. 2013. The 2011 economic benefits of wildlife viewing in Florida. Florida Fish and Wildlife Conservation Commission. Retrieved from <http://www.myfwc.com>.

Audubon. 2018. Flyways of America: Atlantic flyway. National Audubon Society. Retrieved from <https://www.audubon.org>.

Barber, A., L. Walters, and A. Birch. 2010. Potential for restoring biodiversity of macroflora and macrofauna on oyster reefs in Mosquito Lagoon, Florida. Biological Sciences 73(1):47-62.

Bastyan, G. R., and M. L. Cambridge. 2008. Transplantation as a method for restoring the seagrass *Posidonia australis*. Estuarine, Coastal and Shelf Science 79:289-299.

Beck, M. W., R. D. Brumbaugh, L. Airoldi, A. Carranza, L. D. Coen, C. Crawford, O. Defeo, G. J. Edgar, B. Hancock, M. C. Kay, H. S. Lenihan, M. W. Luckenbach, C. L. Toropova, G. Zhang, and X. Guo. 2011. Oyster reefs at risk and recommendations for conservation, restoration, and management. BioScience 61:107-116.

Beerens, J. M., P. C. Frederick, E. G. Noonburg, and D. E. Gawlik. 2015. Determining habitat quality for species that demonstrate dynamic habitat selection. Ecology and Evolution 5(23):5685-5697.

Boudreaux, M. L., J. Stiner, and L. Walters. 2006. Biodiversity of sessile and motile macrofauna on intertidal oyster reefs in Mosquito Lagoon, Florida. Journal of Shellfish Research 25:1079-1089.

Brockmeyer, R. E., J. R. Rey, R. W. Virnstein, R. G. Gilmore, and L. Earnest. 1996. Rehabilitation of impounded estuarine wetlands by hydrologic reconnection to the Indian River Lagoon, Florida. Wetland Ecology and Management 4(2):93-109.

Brush, J. M., A. C. Schwarzer, and P. C. Frederick. 2017. Importance and function of foraging and roost habitat for wintering American Oystercatchers. Estuaries and Coasts 40:286-295.

Burdick, D. M., M. Dionne, R. M. Boumans, and F. T. Short. 1997. Ecological responses to tidal restorations of two northern New England salt marshes. Wetlands Ecology and Management 4(2):129-144.

Burger, J., S. A. Carlucci, C. W. Jeitner, and L. Niles. 2007. Habitat choice, disturbance, and management of foraging shorebirds and gulls at a migratory stopover. Journal of Coastal Research 23(5):1159-1166.

Campbell, D., S. Jachec, and L. Walters. 2015. Quantifying the effects of boat wakes on intertidal oyster reefs in Florida. Integrative and Comparative Biology 55:E25-E25.

Chambers, L. G., S. A. Gaspar, C. J. Pilato, H. E. Steinmulller, K. J. McCarthy, P. E. Sacks, and L. J. Walters. 2018. How well do restored intertidal oyster reefs support key biogeochemical properties in a coastal lagoon? Estuaries and Coasts. 41:784-799.

Christensen-dalsgaard, S., J. Mattisson, T. Bekkby, H. Gundersen, R. May, E. Rinde, and S. H. Lorentsen. 2017. Habitat selection of foraging chick-rearing European shags in contrasting marine environments. Marine Biology 164:196.

Conway, C. J. 2011. Standardized North American marsh bird monitoring protocol. Waterbird Society 34(3):319-346.

Davidson, N. C. 2014. How much wetland has the world lost? Long-term and recent trends in global wetland area. Marine and Freshwater Research 65:934-941.

Florida Fish And Wildlife Conservation Commission. 2017. Florida's endangered and threatened species. Retrieved from <http:/myfwc.com>.

Frederick, P., N. Vitale, B. Pine, J. Seavey, and L. Sturmer. 2016. Reversing a rapid decline in oyster reefs: Effects of durable substrate on oyster populations, elevations, and aquatic bird community composition. Journal of Shellfish Research 35(2):359-367.

Gain, I. E., R. A. Brewton, M. M. Reese Robillard, K. D. Johnson, D. L. Smee, and G. W. Stunz. 2017. Macrofauna using intertidal oyster reef varies in relation to position within the estuarine habitat mosaic. Marine Biology 164(8):10.1007/s00227-016-3033-5.

Garvis, S. K., P. E. Sacks, and L. J. Walters. 2015. Formation, movement, and restoration of dead intertidal oyster reefs in Canaveral National Seashore and Mosquito Lagoon, Florida. Journal of Shellfish Research 34(2):251-258.

Grabowski, J. H., and C. H. Peterson. 2007. Restoring Oyster Reefs to Recover Ecosystem Services. Pages 281-295 *in* Ecosystem Engineers: Plants to Protists (K. Cuddington, J. Byers, W. Wilson, and A. Hastings, Eds). Academic Press, Burlington, Massachusetts.

Grabowski, J. H., R. D. Brumbaugh, R. F. Conrad, A. G. Keeler, J. J. Opaluch, C. H. Peterson, M. F. Piehler, S. P. Powers, and A. R. Smyth. 2012. Economic valuation of ecosystem services provided by oyster reefs. BioScience 62(10):900-909.

Gregalis, K. C., M. W. Johnson, and S. P. Powers. 2009. Restored oyster reef location and design affect responses of resident and transient fish, crab, and shellfish species in Mobile Bay, Alabama. Transactions of the American Fisheries Society 138(2):314-327.

Grizzle, R. E., J. R. Adams, and L. J. Walters. 2002. Historical changes in intertidal oyster (*Crassostrea virginica*) reefs in a Florida lagoon potentially related to boating activities. Journal of Shellfish Research 21(2):749–756.

Harley, C. D. G., A. R. Hughes, K. M. Hultgren, B. G. Miner, C. J. B. Sorte, C. S. Thornber, L. F. Rodriguez, L. Tomanek, and S. L. Williams. 2006. The impacts of climate change in coastal marine systems. Ecology Letters 9:228-241.

Harris, K. P. 2018. Oyster Reef Restoration: Impacts on Infaunal Communities in a Shallow Water Estuary. University of Central Florida Honors in the Major Thesis 366, Orlando.

Hillebrand, H., D. M. Bennett, and M. W. Cadotte. 2008. Consequences of dominance: a review of evenness effects on local and regional ecosystem processes. Ecology 89(6):1510-1520.

Kerr, D. W., I. B. Hogle, B. S. Ort, and W. J. Thornton. 2016. A review of 15 years of *Spartina* management in the San Francisco estuary. Biological Invasions 18:2247-2266.

Kleppel, G. S., D. R. Christie, W. Milon, N. P. Smith, and G. A. Vargo. 1996. The state of Florida's estuaries and future needs in estuarine research, part 5: The state of Florida's estuaries. Florida Sea Grant College Program University of Florida. Part 5:16-50.

Leopoldo, M., and J. A. Collazo. 1997. Food habits of 4 species of wading birds (*Ardeidae*) in a tropical mangrove swamp. Colonial Waterbirds 20(3):413-418.

Manis, J. E., S. K. Garvis, S. M. Jachec, and L. J. Walters. 2015. Wave attenuation experiments over living shoreline over time: a wave tank study to assess recreational boating pressures. Journal of Coastal Conservation 19:1-11.

McCune, B., and J. B. Grace. 2002. Analysis of Ecological Communities. MjM Software Design, Gleneadon Beach, Oregon.

McKinney, R. A., and K. B. Raposa. 2013. Factors influencing expanded use of urban marine habitats by foragingwading birds. Urban Ecosystems 16:411-426.

Nielsen, S., B. Eggers, and S. Collins. 2000. The influence of seawalls and revetments on the presence of seagrass in the Indian River Lagoon, a preliminary study. Florida Scientist 63(1):48-61.

Olin, J. A., C. M. Bergeon Burns, S. Woltmann, S. S. Taylor, P. C. Stouffer, W. Bam, L. Hooper-Bui, and R. E. Turner. 2017. Seaside Sparrows reveal contrasting food web responses to large-scale stressors in coastal Louisiana saltmarshes. Ecosphere 8(7):e01878.10.1002/ecs2.1878.

Pickens, B. A., and S. L. King. 2014. Multiscale habitat selection of wetland birds in the northern Gulf coast. Estuaries and Coasts 37:1301-1311.

Pierce, R. L., and D. E. Gawlik. 2010. Wading bird foraging habitat selection in the Florida Everglades. Waterbirds 33(4):494-503.

Piersma, T., Y. C. Chan, T. Mu, C. J. Hassell, D. S. Melville, H. B. Peng, Z. Ma, Z. Zhang, and D. S. Wilcove. 2017. Loss of habitat leads to loss of birds: Reflections on the Jiangsu, China, coastal development plans. Wader Study 124(2):93-98.

Poli, C. L., A. L. Harrison, A. Vallarino, P. D. Gerard, and P. G. R. Jodice. 2017. Dynamic oceanography determines fine scale foraging behavior in Masked Boobies in the Gulf of Mexico. Public Library of Science (PLOS) One 12(6):e0178318.

Polidoro, B. A. , G. M. Ralph, K. Strongin, M. Harvey, K. E. Carpenter, R. Arnold, J. R. Buchanan, K. Mohamed Abdallahi Camara, B. B. Collette, M. T. Comeros-Raynal, G. De Bruyne, O. Gon, A. S. Harold, H. Harwell, P. A. Hulley, T. Iwamoto, S. W. Knudsen, J. de Dieu Lewembe, C. Linardich, K. C. Lindeman, V. Monteiro, T. Munroe, F. K. E. Nunoo, C. M. Pollock, S. Poss, B. Russell, C. Sayer, A. Sidibe, W. Smith-Vaniz, E. Stump, M. Sylla, L. Tito de Morais, J. C. Vié, and A. Williams. 2017. The status of marine biodiversity in the eastern central Atlantic (west and central Africa). Aquatic Conservation: Marine Freshwater Ecosystems 27:1021-1034.

Provancha, J. A., and D. M. Scheidt. 2000. Long-term trends in seagrass beds in the Mosquito Lagoon and northern Banana River, Florida. Pages177-193 *in* Seagrasses: Monitoring, Ecology, Physiology, and Management (S. A. Bortone, Ed.). CRC Press, Boca Raton, Florida.

R Core Team (2017). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. <http://www.R-project.org/>.

Raposa, K. B., S. Lerberg, C. Cornu, J. Fear, N. Garfield, C. Peter, R. L. J. Weber, G. Moore, D. Burdick, and M. Dionne. 2017. Evaluating tidal wetland restoration performance using National Estuarine Research Reserve System reference sites and the Restoration Performance Index (RPI). Estuaries and Coasts 41(1):36-51.

Schikorr, K. E., and H. M. Swain. 1995. Wading birds-barometer of management strategies in the Indian River Lagoon. Bulletin of Marine Science 57(1):215-229.

Schnell, G. D., B. L. Woods, and B. J. Ploger. 1983. Brown Pelican foraging success and kleptoparasitism by Laughing Gulls. Auk 100:636-644.

Smith, N. P. 1986. The rise and fall of the estuarine intertidal zone. Estuaries 9(2):95-101.

Smith, N. P. 1987. An introduction to the tides of Florida's Indian River Lagoon. I. Water levels. Florida Scientist 50(1):49-61.

Smith, N. P. 1993. Tidal and nontidal flushing of the Florida's Indian River Lagoon. Estuaries 16(4):739-746.

Stolen, E. D., J. A. Callazo, and H. F. Percival. 2009. Vegetation effects on fish distribution in impounded salt marshes. Southeastern Naturalist 8(3):503-514.

Walters, L. J., P. E. Sacks, M. Y. Bobo, D. L. Richardson, and L. D. Coen. 2007. Impact of hurricanes and boat wakes on intertidal oyster reefs in the Indian River Lagoon: Reef profiles and disease prevalence. Florida Scientist 70:506-521.

Florida Field Naturalist 47(2):60-81, 2019.

TWENTY-EIGHTH REPORT OF THE FLORIDA ORNITHOLOGICAL SOCIETY RECORDS COMMITTEE: 2017-2018

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Abstract.—The Records Committee of the Florida Ornithological Society met at the Florida Museum of Natural History on 22 July 2018. We reviewed 76 new reports; in addition, two submissions tabled at our previous meeting were reviewed, one submission unresolved from our previous meeting was reviewed, and two previously decided submissions were reopened. Of the 81 total reports we reviewed at the meeting, 62 were documented by still photographs or video (several of these also had audio documentation), three were documented solely by audio recordings, and 11 were documented by specimens deposited in museum collections. The other six were sight reports with varying amounts of written documentation. Of these 81 reports, 66 (80.2%) were accepted (one of them a species triplet), nine were not accepted (11.1%), two were tabled (2.0%), and six were unresolved (7.4%). The submissions include five species that would have been new additions to the Official List of Florida bird species if accepted (Stygian Owl, House Crow, Brown-chested Martin, Caribbean/Sinaloa Martin), but only one of these was accepted: Stygian Owl. The Official State List remains at 525 species, however, because Thayer's Gull was removed following actions of the American Ornithological Society's North American Classification Committee. The submission of a *Progne* martin was accepted to a three-species group (Caribbean, Sinaloa, or Cuban Martin); Caribbean and Sinaloa have not been recorded previously in Florida, and the only Cuban Martin record dates back to the 1890s.

This twenty-eighth report of the Florida Ornithological Society Records Committee (FOSRC) summarizes decisions made by the Committee for the submission year ending in July 2018. Committee activity and operations are guided by our "Rules and Procedures," available from the author. The FOSRC routinely evaluates reports of review-listed rare species (20 or fewer accepted records or reports over the previous ten years) and reports of species occurring for the first (known) time in the state. On occasion, when we receive a recommendation, we also consider whether an exotic species meets our criteria for establishment in Florida. Reference here to "the Committee" refers to FOSRC.

The FOSRC met at the Florida Museum of Natural History on 22 July 2018. We reviewed 76 new reports; in addition, two submissions tabled at our previous meeting were reviewed, one submission unresolved from our previous meeting was reviewed, and two previously

decided submissions were reopened. Documentation supporting the 81 total submissions included photographs and video (62 submissions, several of these also had audio documentation), audio recordings (3 submissions), and specimens deposited in museum collections (11 submissions). The other six submissions were sight reports with varying amounts of written documentation. Of these 81 reports, 65 (80.2%) were accepted (one to a species triplet), nine were not accepted (11.1%), two were tabled (2.0%), and six were unresolved (7.4%). Not surprisingly, the rate of acceptance was much lower for submissions that lacked supporting photographic/audio/specimen evidence (0% accepted, 17% unresolved) than for those with such evidence (83.8% accepted, 6.4 % not accepted, 9.7 % unresolved or tabled). Part of this is attributable to misidentifications or poorly detailed reports submitted by beginning birders.

The submissions included five species that would have been new additions to the Official List of Florida bird species, but only one of these was accepted: Stygian Owl, bringing the State List to 526 species. One of these potentially new State records was accepted to a species triad that included two species not previously recorded in Florida (Caribbean Martin and Sinaloa Martin) and one that has been recorded only once, in 1895 (Cuban Martin; Banks 2000, Greenlaw et al. 2014). The votes for two other potentially new state records (Brown-chested Martin and House Crow) were unresolved. The other submission (Barrow's Goldeneye), representing a potentially new addition to the Official State List, was not accepted. The identification of the latter species was accepted, but the Committee felt that the provenance of this specimen had too incomplete a paper trail to be certain that it was collected in Florida.

This report was prepared on behalf of all members of the FOSRC serving during the 2016-2017 reporting year. The members and their year of term expiration on the FOSRC are: Rafael Galvez (2018), David Goodwin (2019), Andy Kratter (2020), Mark Berney (2021), Elliot Schunke (2022), Michelle Davis (2023), and John Murphy (2024). See the FOS website (above) for a list of the current members of the FOSRC and their addresses.

Committee News, Formats, and Terminology

Committee news.—The FOSRC met once during 2018, on 22 July at the Florida Museum of Natural History, Gainesville. Rafael Galvez reached the end of his term this year on the Committee and cycled off. Michael Brothers, who served on the FOSRC from 2010-2017, was selected to replace Rafael in February 2019. During the 2017-2018 period of this report, the FOSRC website was completely overhauled

and a new entry form has been created to submit reports, which has been functioning well. Although the Committee still does not receive submissions for some records or reports of Review List species that are posted to online sites (e.g., various Facebook pages) or to eBird, the percentage of those that are being submitted has increased this year (see Kratter 2018b).

Formats and terminology.—We followed the current nomenclature and sequence that are used in the American Ornithological Society (formerly American Ornithologists' Union) check-list (AOU 1998) and its supplements through July 2018 (http://checklist.aou.org/) in the species accounts. The lumping of Thayer's Gull (*Larus thayeri*) into Iceland Gull (*Larus glaucoides*) by the AOU (Chesser et al. 2017) resulted in the loss of one species from the Official List, but the subspecies remains on our Review List. Within accounts with more than one submission on a species, each report is introduced sequentially by catalog number. The initials following the catalog number refer to one or more contributors who supplied information to the committee on accepted reports (see list below). We employ the terminology for age of birds outlined by Kratter (2012). We normally do not review subspecies, but we have accepted submissions on distinctive, field-identifiable subspecies whose taxonomic rank may be reevaluated by the AOU in the future. Our use of the words "report" and "record" to describe occurrences of species in Florida follow Robertson and Woolfenden (1992), a distinction that has been followed by subsequent major reviews of the Florida avifauna, and by the Field Observation Committee of the FOS. Individual occurrences that are independently verifiable (specimen, diagnostic photograph, or an audio or video file) are characterized as "records", and if not verifiable as "reports." Accepted reports are special only in the sense that the non-verifiable documentation is deemed to be fully supportive of the identification and the circumstances do not warrant special consideration. In past practice, the Committee has accepted only records (i.e., with verifiable evidence) for addition of a species to the Florida List. After that initial hurdle has been met, reports are considered on the basis of their merits based on available physical evidence and circumstance (provenance not an issue). For each species, I provide a review of the status of the species in Florida chiefly based on FOSRC data or through the end of 2016, as specified.

Abbreviations used here in the species accounts are AOU (American Ornithologists' Union), FLMNH (Florida Museum of Natural History, Gainesville), FOSRC (Florida Ornithological Society Records Committee), NP (National Park), NWR (National Wildlife Refuge), and SP (State Park).

Submitters of reports: Daphne Asphell, Steve Backes, Mark Berney (MBe), Wes Biggs (WB), Jeff Bouton (JB), Michael Brothers (MBr) Chris Brøwn (CB), Jerry and Brenda Calloway (JBC), Norman & Rowena Carter (NRC), Will Chatfield-Taylor, Kevin Dailey (KD), Michelle Davis (MD), Rangel Diaz (RaD), Robin Diaz (RoD); Lucy Duncan (LD), Lee Dunn (LDu), Jim Eager (JM), Gil Ewing, Carmen Ferreiro (CFe), Christopher Ferro, Charlie Fischer (CFi), Noah Frade (NF), Mario Garcia (MG), Reinhard Geisler (RG), Jerry Gibson (JG), Colin Gjervold (CGj), Carl Goodrich (CGo), David Goodwin (DG), Mitchell Harris, Claire Herzog (CH), Paul Hueber (PH), Edward Kelly, Andy Kratter (AK), Alex Lamoreaux (AL), Maureen Leong-Kee (MLK), Larry Manfredi (LM), David McQuade, Yve Morrell (YM), Don Morrow, John Murphy (JM), Roy Netherton (RN); Mike Ostrowski (MO), Robin Potvin, Bruce Purdy, Brian Rapoza (BR), Thomas Rohtsalu (TR), Shane Runyon (SR), Kim Savides (KS), Elliot Schunke (ES), David Simpson (DS), Michael Vasi (MV), Rich Ward (RW), Audrey Whitlock (AW), David Winkler, and Suzanne Zuckerman (SZ).

SUBMISSIONS ACCEPTED

BRANT, *Branta bernicla*

2018-1284 (RN). This pale-bellied Brant was found and photographed on 29 November 2017, on South Ocean Drive in Jensen Beach (St. Lucie County).

2018-1299 (KD, TR). Another pale-bellied Brant was found 12 March 2017 on "Sister's Creek" in the Intracoastal Waterway of Duval County (30.396193, -81.456309). It was present until 14 March.

This species was added to the Review List in 2016. Of the ten occurrences listed on eBird between July 2007 and July 2018, including the two above, five were documented, including two in the winter of 2016-17 (Kratter 2018). Greenlaw et al. (2014) listed it as an irregular rare migrant and winter resident coastally. Both of these pertain to the expected north Atlantic gray-bellied subspecies, although one of last year's birds was a "Black" Brant.

AMERICAN BLACK DUCK, *Anas rubripes*

2018-1336 (MBr).This probable female was photographed in the surf at the 2600 block of S. Atlantic Avenue in Daytona Beach Shores (Volusia County) on 3 January 2018.

This species was added to the Review List in 2016. One report (2016-1149, Alachua County November 2011) was accepted by the FOSRC in 2016, and a videotaped group of 18 (2017-1197, Wakulla County, December 2016) was accepted in 2017. Records on eBird indicate that this species is a rare but regular winter visitor in north Florida, but most submissions lack documentation. Greenlaw et al. (2014) listed it as an occasional to rare migrant and winter resident in the Panhandle and north peninsula.

HARLEQUIN DUCK, *Histrionicus histrionicus*

2018-1321 (JM). This hen-plumaged bird was present and photographed at the Alligator Point Marina (Franklin County) from 24-26 November 2017.

This species was added to the Review List in 2016. Two records were accepted last year (2017-1222, March 2017 in Indian River County, and 2017-1243 May 2017 Nassau County). The latter bird was present through May 2018 (eBird). For the period July 2007 through July 2018 eBird lists six occurrences for Florida, including the two above; all but one of these were documented. Greenlaw et al. (2014) listed it as an irregular rare migrant and winter resident coastally.

Common Merganser, *Mergus marganser*

2018-1262. This hen-plumaged bird was photographed during the Pasco Christmas Bird Count at Seven Springs Wastewater Treatment Facility (Pasco County) on 28 December 2016.

This is the tenth Common Merganser accepted by the FOSRC; all of these have been since 2009 and the tenth was an "old" undated specimen from Pasco County. Records have mostly come from the Gulf Coast (Santa Rosa, Okaloosa, Citrus, Pasco, Lee counties) and twice along the Atlantic coast (Duval and Volusia County). The increase of occurrence in Florida is in agreement with some regional increases in populations in North America (Pearce et al. 2015).

Masked Duck, *Nomonyx dominicus*

2018-1327 (WB). On 2 May 2018, Deborah Ruth Buterbaugh found this female floating in mangroves on Saddlebunch Keys near Key West (Monroe County). The weak bird was brought to the Key West Wildlife Center, but it died overnight. The carcass was secured by Wes Biggs, and then brought to the Florida Museum of Natural History, where it was prepared as study skin, partial skeleton, and spread wing (UF 52700). The enlarged ovary and thickened oviduct of this female indicated possible recent or near-future breeding (though it had no recently ruptured follicles or even enlarged ova), but the habitat where it was found was clearly not suitable for breeding. The hemorrhaging of the shoulder and neck indicate it may have hit a wire while flying.

This is the tenth Masked Duck accepted by the FOSRC. Greenlaw et al. (2014) considered it a rare visitor, but it was apparently more regular from 1955 to the mid-1980s. Breeding has been suspected previously in Florida (Bowman 1995), but never substantiated (Anderson 1996).

Inca Dove, *Columbina inca*

2018-1272 (JBC, LD). This bird was present and photographed at Ft. Pickens Gulf Islands National Seashore (Escambia Co.) from 12-14 September 2018.

This bird continues the upsurge of Inca Dove populations in northern Florida (Kratter 2018). The first Inca Dove in Florida was photographed in September 2011 in Franklin County (Greenlaw et al. 2014). Five additional records in north Florida have been accepted since: birds photographed in October 2011 and May 2017 in Santa Rosa County, one photographed in February 2012 in Duval County, and birds photographed in May 2015 and June 2017 in Escambia County.

Zenaida Dove, *Zenaida aurita*

2018-1332 (AL, BR, LM). This dove was discovered visiting puddles on dirt tracks west of the Miami Executive Airport on SW 120th Street (Miami-Dade County) on 8 July 2018 by Alex Lamoreaux. It was seen and photographed by dozens of birders during its stay (at least through August 2018).

Previous occurrences include seven records from Monroe County in the Florida Keys (Windley Key Feb-Apr 1996; Sugarloaf Key November 2001; Key Largo June 1988, May 2002, and June 2009; Bahia Honda Feb. 2010; and Long Key February-May 2016); and one accepted report from Key Biscayne, Miami-Dade County in October 2004 (Smith and Smith 1998). Two undated pre-1900 specimens from Florida have not been assessed by the FOSRC, but were accepted by Robertson and Woolfenden (1994) and Greenlaw et al. (2014).

Vaux's Swift, *Chaetura vauxi*

2018-1288 (AK). For the third straight winter, a flock of swifts night-roosted in the chimney of Dauer Hall on the University of Florida campus in Gainesville (Alachua County). They were first detected on 27 November 2017 and the flock of

five stayed at least until March 2018. They were also frequently seen at nearby Sweetwater Wetlands Park, where Chris Rasmussen was able to take a series of excellent photographs, which showed the extensive pale rump, distinguishing these birds from Chimney Swift (*C. pelagica*). Like the birds last winter, this flock was hardly ever vocal, and no recordings were obtained. In winter 2015-16, when up to 16 birds were roosting, several diagnostic recordings were made.

Aside from the previous records of flocks at the same locale (#2016-1108, #2017-1229), six were recorded in Gainesville in 1993 (Webber and Collins 1993), and a single bird in Apalachicola (Franklin County) was captured and measured in January 1996 and December 1997 (McNair and Lewis 1997, 1998). The latter locale had a flock of as many as 49 birds the previous winter (November 1994 to 21 April 1995); audio recordings from this flock were also positively identified as Vaux's (McNair and Lewis 1997). Florida still lacks any documentation that Chimney Swifts winter in the state, and until documentation is forthcoming it should be assumed that wintering *Chaetura* swifts in Florida are Vaux's.

Broad-billed Hummingbird, *Cynanthus latirostris*

2018-1303 (JO). This male was photographed on Nez Perce Trail in Tallahassee (Leon County) on 3 January 2018. It was present from 1 January to 4 February.

This is the eighth accepted Florida record, all since 2004. Singles previously appeared in Escambia County, (#2004-549, September 2004), Duval County (#2008-663, January 2008), Calhoun County (#2008-660, January 2008), Seminole County (#2011-841, January-February 2011), Franklin County (#2011-864, September 2011), Leon County (#2013-949, January-February 2013), and Collier County (#2016-1166, February 2016).

Hudsonian Godwit, *Limosa haemastica*

2018-1322 (JM). This bird was present and photographed from 25-30 April 2018 at wetlands on Gulf Avenue in Carabelle (Franklin County; 29.84727, -84.65153)

This species was added to the Review List in 2016. One record was accepted last year (2017-1246, May, Wakulla County). In the ten-year period up to this meeting (2008-2018), eBird lists ten occurrences, six records (St. Johns County in June 2016, and five from Wakulla County, including this and last year: Sep 2011, May 2015, and the above) and four sight reports (September 2011 and August 2012 in Palm Beach County, September 2010 in St. Johns County, and August 2011 in Duval County). Greenlaw et al. (2014) listed it as a very rare to uncommon transient. From recent records (1-2 per year at most) it seems better categorized as "very rare to rare."

Ruff, *Calidris pugnax*

2018-1266 (NF). This bird was found and photographed by Noah Frade on 11 August 2017 at the Six Mile Bend Sod Fields (Palm Beach County).

2018-1267 (KD). Kevin Dailey discovered this bird and obtained distant but diagnostic photographs on 25 August 2017 at the restricted-access Dayson Basin of the Marine Corps Safety Facility in Jacksonville (Duval County).

2018-1290 (AK). This female was found by Dale Bonk at Sweetwater Wetlands Park (SWP; Alachua County) on 30 December 2017. It was seen for a few weeks and then refound, with the male below, at the Home Depot retention pond in northwest Gainesville, about five km from SWP. Careful examination of patterns of wear in the wing coverts and scapulars indicated that it was the same bird as at SWP. On

1 May Mike Manetz saw and photographed a female at SWP, which may have been the same bird, but extensive molt in the interim made comparisons impossible.

2018-1291 (AK). On 15 January 2018, Jen Donsky discovered a second Ruff in Gainesville, at the Home Depot retention pond. The bright red legs and direct comparison with the above bird indicated that this was a male. It was present until 21 January.

This species was added to the Review List in 2016. Three records were accepted in 2016 (Kratter 2018a) and one in 2017 (Kratter 2018b). Including these records from the past three years, over the 10 years prior through 2018, eBird lists 16 records for Florida and four reports. Greenlaw et al. (2014) listed it as a regular rare migrant and winter visitor.

South Polar Skua, *Stercorarius maccormicki*

2018-1268 (KS, JB, RG). This apparent worn juvenile was found by Kim Savides at Tiger Tail Beach (Collier County), on 25 August 2018. It was seen by many during its stay until 30 August. Though South Polar is the only skua species that has been documented for Florida, Brown Skua (*S. antarcticus*) and Great Skua (*S. skua*) are also possible and present difficult identification problems. The molt and wear pattern indicate a bird originating in South Polar region. The relatively small bill and pale plumage indicate *maccormicki*.

The South Polar Skua is considered a casual vagrant to Florida (Greenlaw et al. 2014) with only five accepted records (#1984-024,Brevard County, September 1982; #1998-394, Volusia County, November 1998; #1998-395 Nassau County, October 1998; #2000-414, Palm Beach County, December 1998; #2014-1026, specimen from Palm Beach County, May 2014) and two sight reports (#1994-319, Volusia County, October 1994; #2009-742, May 2009, Volusia County, the latter accepted to skua species). The species is much more regular off North Carolina (eBird records), where pelagic trips are much more frequent.

Long-tailed Jaeger, *Stercorarius longicaudus*

2017-1247 (DM). This second-year bird, photographed off Lee County in the Gulf of Mexico (26°15' 40.2" N, 82°58' 05.2" W) on 27 May 2017, was originally not accepted at our 2017 meeting, because the Committee felt that molt in the outer primaries was obscuring diagnostic patterns of primary shafts and that the extent of white on the ventral side of the primaries was more extensive than typical for Long-tailed. After our meeting, the original observer showed the images to several other skilled jaeger observers on the Pacific Coast, where all three jaeger species are more plentiful, and they concluded that it was a Long-tailed. DM petitioned the Committee to reconsider, and the Committee voted to reopen the submission for this meeting. Expert opinions were obtained from three people familiar with all three species of jaegers. All supported identification of Long-tailed Jaeger, based on overall proportions (long hind end), plumage features (especially paleness of the head), and short thick bill. The Committee concurred with these opinions.

This species was added to the Review List in 2016. A single record was accepted in 2016 and four records were accepted in 2017. In the 10 years prior to this meeting, eBird lists 10 records for Florida and four reports. Greenlaw et al. (2014) listed it as a very rare to rare transient and apparent winter visitor.

Thick-billed, Murre *Uria lomvia*

2018-1294 (AK). This hatch-year male washed ashore in Ormond by the Sea (Volusia County) on 20 November 2017. It was brought to the Marine Science Center and died the same day. The specimen was donated to the FLMNH and prepared as a skin/partial skeleton (UF 52465). The bill is deep basally but

relatively short. The quite similar Common Murre (*U. aalge*), which has not been documented from Florida but has occurred in the Atlantic south to South Carolina, has a longer bill with a less deep base.

This is the fifth accepted record for Florida; singles were found in Palm Beach County in December 1992 (#2010-419, specimen), Brevard County in November 2008 (#2008-706, specimen), another in Palm Beach County in November 2009 (#2009-719, specimen), and birds photographed in December 2012 in Duval County (#2012-926) and Nassau County (#2012-928).

RAZORBILL, *Alca torda*

2018-1331 (AK). This adult female washed ashore in Daytona Beach (Volusia County) on 28 January 2018 and was brought to the Marine Science Center, where it died on 1 February. The specimen was donated to the FLMNH and prepared as a study skin (UF 52693).

For most of the past ten years, Florida has averaged about 1 Razorbill record per year (FOSRC records). Most of these have been birds that have washed up on beaches and brought to wildlife rehabilitation hospitals on the north Atlantic Coast south to Brevard County. However, the winter of 2012-13 saw a huge influx likely involving 1000s of these alcids, with many birds reaching the Gulf Coast, all the way northwest to Pensacola, with one bird making it to Louisiana.

BLACK-LEGGED KITTIWAKE, *Rissa tridactyla*

2018-1298 (AK). This first-cycle male was found close to shore by a fisherman on Lower Matecumbe Key, mile Marker 74.5 (Monroe County) on 29 November 2017. It was brought to the Florida Keys Wild Bird Center where it died on 8 January 2018. The bird was donated to the FLMNH, where a skin, partial skeleton, and spread wing specimen was prepared (UF 52528).

This species was added to the Review List in 2016. In the ten-year period prior to this meeting, eBird lists seven documented records and 11 sight reports. These 18 occurrences are along the Florida Peninsula on both the Gulf coast (two) and Atlantic coast (16). Greenlaw et al (2014) considered it a rare migrant and winter resident.

SABINE 'S GULL, *Xema sabini*

2018-1281 (MO). This adult was found and photographed by Mike Ostrowski at Siesta Key (Sarasota County) on 4 November 2017.

This species was added to the Review List in 2016. Two records and two sight reports were accepted in 2017. Greenlaw et al. (2014) considered it an irregular, rare fall and occasional spring visitor. It also appears to be an occasional winter visitor, as indicated by the Brevard/Indian River County occurrence in 2017 (Kratter 2018b) and two sight reports in January from Volusia County (eBird), as well as an occasional summer visitor (Kratter 2018b).

BLACK-HEADED GULL, *Chroicocephalus ridibundus*

2018-1287 (AK). This first-cycle bird was found by Matt Johnstone at St, Marks NWR Levee Trail, on 5 December 2017. The partially consumed carcass was found by Michael Vasi on 8 December in the same area and donated to the FLMNH, where a partial skeleton and two spread wings were preserved (UF 52422).

2018-1292 (CB). This adult was photographed by Chris Brøwn on 25 January 2018 at the Central Disposal Facility in Cocoa (Brevard County). It was present there until 15 February 2018.

This species is a very rare winter transient and winter visitor to the state (Greenlaw et al. 2014). Including these two records, the FOSRC has accepted 14 records and one sight report. The report from Wakulla County is only the second record from the Panhandle.

California Gull, *Larus californicus*

2018-1333 (MBr). On 12 February 2018, Michael Brothers found and photographed this second-cycle bird in the huge gull congregation at Daytona Beach Shores (Volusia County).

2018-1334 (MBr). On 16 February Michael Brothers found and photographed this first-cycle bird in the huge gull congregation at Daytona Beach Shores. It was present until 20 February.

The FOSRC has previously accepted 14 records of California Gull; nine of these were from the large gull concentrations in Volusia County.

Elegant Tern, *Thalasseus elegans*

2018-1265 (MLK). These two birds were found and photographed by Maureen Leong-Kee on 23 June 2017 at Santa Rosa Beach (Walton County). Both birds have long, slightly decurved orange bills, which appear to be less bulky than that of Royal Tern *(T. maximus)*. One bird is close to breeding plumage with an all-black cap; the other bird has a white forehead. One dissenting Committee member felt that the wings were thicker than would be found in Elegant, and the bill lacked sufficient down-curve.

2018-1278 (CGj, CH). This tern was found on 15 October 2017 at Siesta Key (Sarasota County), where Elegant Terns, "Cayenne" Sandwich Terns (*T. s. eurygnatha*), and assumed hybrids, between Elegant and Sandwich Terns (*T. s. acuflavidus*) have been found off and on for the past several years. The all-orange bill has a very slight dark streak running between the bill plates, possibly indicating hybridization, but the long slightly down-curved and thin profile bill, along with the scruffy crest on the nape, and size (slightly larger than Sandwich Terns) indicate an Elegant Tern.

The FOSRC has previously accepted nine submissions of Elegant Terns in Florida; eight of these were clustered on the Gulf Coast between Pinellas and Lee counties; the exception was in the Florida Keys (April 2015 at Pigeon Key, Monroe County). The above record is the first from the Panhandle.

Yellow-nosed Albatross, *Thalassarche chlororhynchos*

2018-1335 (MB). An unnamed fisherman took photographs of this bird from his boat as he fished about nine miles east of Ponce de Leon Inlet (Volusia County, 29° 09.927 N; 80° 41.655 W) on 26 December 2017. He sent the photos to Michael Brothers for identification.

This is the fifth record of Yellow-nosed Albatross accepted by the FOSRC; all previous records were off the Gulf Coast of Florida. Reports of albatrosses off of Palm Beach County in 1995 (FOSRC #1995-326) and Collier County, on 16 December 2015 (#2016-1109) were accepted to albatross species (Greenlaw et al. 2014; Kratter 2018a). The Black-browed Albatross (*T. melanophris*) has occurred several times in the north Atlantic and could potentially occur in Florida.

Northern Fulmar, *Fulmarus glacialis*

2018-1277 (PH). On 3 October 2017, Paul Hueber photographed this pale morph from shore at Tom Renick Park in Ormond Beach (Volusia County). This bird was one of several that were photographed and submitted to eBird, but not to the FOSRC, between 3-5 October.

2018-1293 (AK). This pale morph, a juvenile female, was found by J. Gross on 12 November 2017 wrapped in monofilament and weak on Bethune Beach, New Smyrna Beach (Volusia County). It was brought to the Marine Science Center

where it died 17 November. The specimen was given to the FLMNH and prepared as a complete skeleton (UF 52461).

2018-1297 (AK). This pale morph, another juvenile female, was found beached at Cape Canaveral Air Force Station on 3 December 2017 and brought to the Florida Wildlife Hospital where it died the same day. It had a broken tarso-metatarsus The bird was given to the FLMNH and prepared as a skin, partial skeleton, and spread-wing (UF 52504).

Accepted Northern Fulmar records for Florida now total twelve birds, all since 2006 (Kratter and Small 2007). All previous ones have been found washed up on beaches from St. Johns County south to Palm Beach County. One bird (#FOSRC 2009-740) was found alive, rehabilitated, and later released at sea during a pelagic trip (Kratter 2010).

MANX SHEARWATER, *Puffinus puffinus*

2018-1296 (AK). This bird, an immature female, washed ashore alive on 30 June 2017 in Cocoa Beach (Brevard County). It was brought to the Florida Wildlife Hospital, but died there the same day. The bird was given to the FLMNH and prepared as a study skin (UF 52276). The bird had an injury to the distal humerus.

The FOSRC has now accepted 16 submissions, 15 from Florida's Atlantic coast (Nassau County south to Miami-Dade County), and one from the western Panhandle. Five earlier specimens (Stevenson and Anderson 1994) have not been assessed by the FOSRC. Greenlaw et al. (2014) considered it a rare winter visitor. The above bird indicates that nonbreeding young Manx Shearwaters may occasionally occur in the summer in Florida.

NEOTROPIC CORMORANT, *Phalacrocorax brasilianus*

2017-1259 (MBe). Mark Berney photographed this adult at T. Y. (Topeekeegee Yugnee) Park, 3300 N. Park Road in Hollywood (Broward County). This bird was originally found by Allison Scheflow on 4 February 2017 and was present until 25 February. It may be the same bird that wintered at this park in 2015-16 (#2016-1142, Kratter 2018a).

The Neotropic Cormorant was first found in Florida in April 2007 (FOSRC #2007-672; Greenlaw and Kratter 2007). In January 2012 it was found breeding at Wakodahatchee Wetlands (Palm Beach County) and multiple individuals have nested there since. Some of the 25 records accepted by the FOSRC represent the same individuals returning to breed there (see Kratter 2018a).

GREAT CORMORANT, *Phalacrocorax carbo*

2018-1329 (AK). This juvenile female was found emaciated and weak on Marathon Key (Monroe County) on 10 March 2018. It was brought to Marathon Wild Bird Center and died there the following day. The specimen was given to the FLMNH and prepared as study skin and partial skeleton (UF 52686).

This species was added to the Review List in 2016; one report was accepted at our 2017 meeting (#2017-1167, January 2016 in Pinellas County). Of the 13 reports and records in the past 10 years that eBird lists for Florida, ten have photographic documentation.

STYGIAN OWL, *Asio stygius*

2018-1328 (MH). On 2 June 2018, Mark Hedden was checking out a commotion of mobbing Cooper's Hawks (*Accipiter cooperii*) and discovered a roosting owl in the trees of his Key West neighborhood at Seminary Street and Whalton Street (Monroe County, 24.551969, -81.789823). His photographs show a stocky dark owl with prominent, closely set, ear tufts, yellow eyes, a dark gray facial disk, nearly

solid dark brown back with some buff feather edges, creamy underparts heavily streaked with coarse dark streaks and prominent transverse bars on flanks. This is the first record of Stygian Owl for Florida.

The Stygian Owl is a scarce resident in the Greater Antilles (Cuba and Hispaniola) and Neotropics (north to southern Tamaulipas, Mexico). It has twice been found in southeastern Texas (Wright and Wright 1997; Lockwood and Freeman 2014). Birds in the Greater Antilles (*A. s. siguapa* on Cuba, and *A. s. noctipetens* on Hispaniola, although the latter is usually subsumed within *siguapa*) are paler than South American subspecies (König and Weick 2008) and have been reported to have different vocalizations that may merit recognition as a separate species from the Neotropic populations. The bird in Key West was silent.

"Cuban" American Kestrel, *Falco sparverius sparveroides*

2018-1263 (RoD). On 16 June 2017, Robin Diaz photographed a pair (male and female) of very pale American Kestrels on Virginia Key, (25.74225, -80.15083, Miami-Dade County). The photographs clearly show both birds with nearly unmarked underparts, reduced malar marks, and white nape spots; these marks are diagnostic for the subspecies of American Kestrel from Cuba and the Bahamas (*F. s. sparveroides*).

2018-1264 (RoD). On 10 September 2011 Robin Diaz photographed a very pale American Kestrel male at the Wastewater Treatment Plant Virginia Key (Miami-Dade County). This bird was completely unmarked below, with a slight buff blush on the breast, had a reduced malar mark and white nape spots.

The Cuban subspecies of American Kestrel is common on Cuba, the Isle of Youth, and in the southern Bahamas. The first documented record of this subspecies in Florida was accepted last year (#2017-1213, January 2017 from Miami-Dade County). Previous reports (e.g., Bailey (1925) lacked verifiable evidence (Greenlaw et al. 2014).

Cuban Pewee, *Contopus caribaeus*

2018-1300 (RW). On 18 March 2018 Rich Ward found and photographed this flycatcher at Fort Zachary Taylor SP (Monroe County).

There have been only seven previous Cuban Pewees accepted by the FOSRC: a bird photographed in March 1995 in Palm Beach County; a sight report from Monroe County in February 2001; a bird audio-recorded in Palm Beach County in November 1999; one audio-recorded and photographed in Miami-Dade County in September 2010, and three others photographed in Miami-Dade County in March 2016, April 2017, and May 2017. The species is resident in the Bahamas and on Cuba.

Alder Flycatcher, *Empidonax alnorum*

2018-1269 (ES). Elliot Schunke audio-recorded this bird at Tall Timbers Research Station (Leon County) on 30 August 2017. It was giving its diagnostic "pip" notes.

2018-1273 (ES, JO). Elliot Schunke and Jeff O'Connell audio-recorded and JO photographed this bird at Crowder Road Landing boat ramp (Leon County) on 15 September 2017. It was giving its diagnostic "pip" notes.

2018-1315 (CFi). Charlie Fischer audio-recorded this bird at Hillsborough River SP, Dead River Road Entrance (Hillsborough County) on 29 September 2017. It was giving its diagnostic "pip" notes.

Although Alder Flycatchers are regular migrants through Florida in the fall (Greenlaw et al. 2014, eBird records), the FOSRC has kept the species on the review list because of difficulties of identification in the genus *Empidonax*, especially in discriminating Alder from the less common Willow Flycatcher (see

below). The FOSRC has now accepted 22 submissions, one from spring and 21 from fall, since it began to solicit submissions of this species in 2008.

Willow Flycatcher, *Empidonax traillii*

2018-1270 (ES, JO). Elliot Schunke and Jeff O'Connell audio-recorded this bird at Elinor Klapp-Phipps Park (Leon County) on 26 August 2017. It was delivering its diagnostic "whit" notes.

2018-1295 (AK). This hatch-year female was found injured by A. Segebart in Holiday Park, Ft. Lauderdale (Broward County) on 6 September 2018. It was brought to the South Florida Wildlife Center, but died there the next day. The specimen was donated to the FLMNH, where a study skin and partial skeleton were prepared (UF 52154). Measurements of the specimen were diagnostic for Willow Flycatcher, using criteria in Pyle (1997).

Judging by the frequency of documented records on eBird, the Willow Flycatcher appears to be less common than Alder Flycatcher in Florida. The FOSRC has accepted six previous submissions (one spring, one mid-June, and four fall) since it began to solicit submissions of this species in 2008.

La Sagra's Flycatcher, *Myiarchus sagrae*

018-1313 (AW). This bird was photographed and audio-recorded by Audrey Whitlock on 14 May 2018 at the Key Largo Hammock State Botanical Site (Monroe County).

This species, found in the Bahamas and on Cuba, was added to the Review List in 2016. Two records were accepted last year (#2017-1189, November 2016 in Miami-Dade County, and 2017-1233, April 2017 in Monroe County). Over the ten-year period (2008-2018) prior to this meeting, eBird lists 24 occurrences in Florida (20 with still photographs or video, including the three listed above) and four sight reports with details. Although this rate of occurrence is slightly higher than the criterion for removal from the Review List, the Committee feels that it is important to keep vagrants from the West Indies, such as La Sagra's Flycatcher, on the Review List, especially because Florida is the only state in the ABA Area where they are found. With one exception, all records are from southeast Florida (the Keys north to Palm Beach County); the exception was one in Manatee County in April 2013.

Sulphur-bellied Flycatcher, *Myiodynastes luteiventris*

2018-1314 (JBC). This bird was photographed by Brenda Calloway at Ft. Pickens (Escambia County) on 18 September 2015.

2018-1317 (RaD). Rangel Diaz photographed this bird on 17 September 2015 at A. D. "Doug" Barnes Park (Miami-Dade County).

Both of these submissions were "lost" when we had trouble receiving posts from the local server. They were "recovered" when checking for missed submissions on the server in 2015. The FOSRC has now accepted 17 submissions of this species. All were recorded between mid-September and mid-November. This highly migratory species breeds from the mountains of Arizona and New Mexico south through Mexico to northern Central America, and winters in southern Central and South America.

Cassin's Kingbird, *Tyrannus vociferans*

2018-1289 (JO). This kingbird was photographed and audio-recorded by Jeff O'Connell at Junwin Court Pond (Leon County) on 15 January 2018. It was found on 14 January and stayed until 20 January. It was found by Don Morrow and Jake Hartung.

All previous Florida records have been from central Florida (Hillsborough and Flagler counties) south, where individuals have often returned for several winters to the same area. These include birds from 1999-2007 at Lake Apopka (Orange County), from 2006-2014 at Stormwater Treatment Areas 5-6 (Hendry

County), and from 2013-2016 in Flagler County. Other records in the past ten years include birds in Jacksonville (Duval County) in 2008, and possibly several near Homestead (Miami-Dade County) in winter 2013-2014.

Fork-tailed Flycatcher, *Tyrannus savana*

2018-1286 (NRC). On 29 November 2017, an adult Fork-tailed Flycatcher was found and photographed by Norman & Rowena Carter on Scrubpens Road in Lorida (Highlands County).

This species was added to the Review List in 2016. Two birds were accepted by the FOSRC in 2017; three birds were accepted in 2016. Over the past 10 years, eBird lists least 19 records for Florida (including those above) and six reports. Greenlaw et al. (2014) list it as an "almost regular, very rare visitor." Records are scattered throughout the year.

Thick-billed Vireo, *Vireo crassirostris*

2018-1280 (RoD, MV). On 23 October, Michael Vasi found and photographed this vireo along the nature trail at Bill Baggs Cape Florida SP (Miami-Dade County). It was present until 9 November.

2018-1318 (MG). On 23 May 2018, Mario Garcia found and photographed this bird at Oleta River SP (Miami-Dade County).

2018-1330 (MD). On the morning of 23 October 2018, a Thick-billed Vireo was mist-netted, photographed, and banded at the banding area of Bill Baggs Cape Florida SP, Miami-Dade, quite near the area where #2018-1280 (above) was photographed a few hours later. The bird above, however, did not have a band, and thus was a different individual.

The FOSRC has now accepted 19 submissions of Thick-billed Vireo. All except one have been in the four southeast Florida counties (Palm Beach 1, Broward 4, Miami-Dade 11, and Monroe 3); the exception was one in Pinellas County in October 2006 (#06-613, Kratter 2008). Dates of occurrence are from August to May. This Caribbean species is resident in the Bahamas, Turks and Caicos, Cuba, and the Cayman Islands.

Yellow-green Vireo, *Vireo flavoviridis*

2018-1312 (JG). This vireo, present 8-9 May 2017, graced Ft. Desoto Park (Pinellas County) and was photographed by Jerry Gibson and a few others.

This is the 14th submission of Yellow-green Vireo accepted by the FOSRC; there is also a specimen from May 1958 in Santa Rosa County. Four of the records are from the western Panhandle, three are from Pinellas County, one from Brevard County (Kratter 2018b), and seven are from south Florida and the Keys (Palm Beach, Miami-Dade, and Monroe counties). All records are from May to November.

Caribbean/Cuban/Sinaloan Martin, *Progne dominicensis / cryptoleucos / sinaloae*

2016-1147 (CG, LD). This interesting martin was photographed in good detail on 29 April 2016 at Fort Zachary Taylor State Historical Park (Monroe County). Caribbean Martin and Sinaloa Martin have not been previously recorded in Florida or the ABA Area; Cuban Martin is known from three or four 1895 specimens from Key West (Greenlaw et al. 2014). This presumed female has a gray throat distinctly cut off from gleaming white underparts. The flanks are smudged pale gray. The undertail coverts are completely unmarked. The tail has a rather long, deep fork. The unmarked undertail and distinct cutoff between throat and breast may be outside the range exhibited by female Purple Martins *(P. subis)*, although that species is highly variable. The plumage pattern is similar to most

depictions of female Caribbean Martin, which breeds throughout the Greater and Lesser Antilles, aside from Cuba. Although female Cuban Martins are usually described as having less distinct border between the white belly and dark flanks than Caribbean Martin, letters provided by the submitter stated that they can be unmarked white below and very difficult to differentiate from Caribbean Martin.

The submission was tabled at our 2106 meeting to gather more information on plumages of *Progne* martins. At the 2017 meeting, we voted not to consider Sinaloa Martin (*P. sinaloae*), an endemic breeder in northwest Mexico with unknown wintering quarters; this species is extremely poorly known. The male is very similar to Caribbean Martin, but the female plumage is almost unknown. Although it seems far less likely for a Sinaloa Martin to show up in Florida than Caribbean or Cuban Martin, a number of species found in that part of Mexico have been recorded in Florida (White-eared Hummingbird, *Hylocharis leucotis*; Broad-billed Hummingbird; Sulphur-bellied Flycatcher; etc.). Kratter took images of specimens of Cuban Martins at the United States National Museum. These females, like other depictions and online images (at the time of the 2017 meeting), showed a much less contrasting cut off between the gray throat and white underparts. The dark smudges on the flanks are also more extensive in Cuban Martins than the bird in question. The Committee felt that this bird, though most similar to female Caribbean Martin, was possibly in the range of variation shown by Purple Martins, and a first state record requires a stronger sense of assurance. We voted at the 2017 meeting not to accept.

The observers were notified of the decision and responded that they felt the plumage was outside the range of variation in female Purple Martins, and second-year male Purple Martin could be eliminated by lack of dark feathers in the throat. I moved that we reopen the file and the Committee agreed by vote to reopen. We returned to considering all three species (Cuban, Caribbean, and Sinaloa). Recent photographs uploaded to eBird, did show some female Cuban Martins having nearly pure white underparts with strongly contrasting dark throat, and thus are very difficult to distinguish from female Caribbean Martin. The few images available online of Sinaloa Martin, and descriptions in the literature indicate that it is very similar to Caribbean/Cuban Martin as well. After considering all available sources, the Committee felt that female Purple Martin could be excluded, and we voted to accept to the three-species grouping.

BAHAMA MOCKINGBIRD, *Mimus gundlachii*

2018-1305 (JE). This bird was present from 7-22 August 2017 at Playalinda Beach on Canaveral National Seashore (Brevard County). Found by Mitchell Harris, it was seen and photographed by dozens of birders.

2018-1308 (SZ). This bird was also seen and photographed by dozens of birders during its stay from 30 April to 19 May 2018 at the Lantana Nature Preserve (Palm Beach County).

2018-1309 (RaD). Rangel Diaz found and photographed this bird at the Deering Estate in Miami (Miami-Dade County) on 20 April 2018. It was not seen afterwards.

2018-1310 (NF). Noah Frade found and photographed this bird at Gulfstream Shores on Key Largo (Monroe County) on 7 May 2018. It was present until 1 June and seen by many birders.

2018-1324 (AK). This bird was found with a spinal fracture at Lighthouse Point (Broward County) on 25 April 2017, and brought to the South Florida Wildlife Center in Ft. Lauderdale. It was euthanized 27 April and donated to the FLMNH, where it was prepared as a skin and partial skeleton (UF 51993).

This species was added to the Review List in 2016. Two Bahama Mockingbird submissions were accepted in 2016 (Kratter 2018a) and one was accepted in

2017 (Kratter 2018b). Over the 10 years prior to 2016, eBird has 19 documented occurrences (including these records) and 3 sight reports for Florida. Greenlaw et al. (2014) listed it as a nearly regular, very rare to rare visitor. Most records are from the southeastern coast and Keys, but the species has been found as far north as Brevard County on the Atlantic coast, and Pinellas County on the Gulf of Mexico. The species is found in The Bahamas and scattered in the Great Antilles, usually on the immediate coast or on smaller islands peripheral to the main islands.

Western Spindalis, *Spindalis zena*

2018-1261 (MV, RaD). A male and female were photographed at Long Pine Key in Everglades NP (Miami-Dade County), and present from 10 July-8 August 2018.

This species, resident in the Bahamas and Cuba, was added to the Review List in 2016. One record was accepted by the FOSRC in 2016 and three were accepted in 2017, although 15 or so were reported to eBird that year (Kratter 2018b). Greenlaw et al (2014) listed it as a regular visitor, with one breeding record (summer 2009 in Miami-Dade County). In the ten years prior to 2018, of the 24 or so shown on eBird, 17 were documented by photographs. All records are from southeast Florida (Indian River, Palm Beach, Broward, and Miami-Dade counties) and the Keys (Monroe County).

Bullock's Oriole, *Icterus bullockii*

2018-1323 (JM). This stunning adult male was found and photographed by John Murphy at Alligator Point (Franklin County, 29.90715, -84.35775) during its stay from 25-26 April 2018.

The FOSRC has accepted 22 previous submissions. Most were in the Panhandle (14) or north peninsula (3). The others are from Monroe County (3) and Osceola County (1). Greenlaw et al. (2014) considered it an irregular very rare to rare migrant and winter visitor.

MacGillivray's Warbler, *Geothlypis tolmiei*

2018-1282 (RG). This bird, present 11-12 November 2017 in Freedom Park in Naples (Collier County), was photographed by Reinhard Geisler.

2018-1325 (SR). On 2 June 2018, during the unsuccessful pursuit of the Stygian Owl in Key West (see above), a MacGillivray's Warbler was found at Charles "Sonny" McCoy Indigenous Park (Monroe County).

The FOSRC has now accepted ten submissions of MacGillivray's Warbler. All except one have been from south Florida (Lee, Collier, Palm Beach, Broward, Miami-Dade, and Monroe counties; the exception was in April 2008 in Pinellas County (2008-682). Greenlaw et al (2014) considered it an irregular, very-rare winter visitor.

Kirtland's Warbler, *Setophaga kirtlandii*

2018-1279 (DS). On 24 October 2018, David Simpson found and photographed this bird at Sebastian Inlet SP (Indian River Co., 27.856174,-80.449886).

This record increases the total of accepted submission of Kirtland's Warbler to 14. A specimen from Palm Beach County in April 1896 has not been assessed by the Committee (Greenlaw et al 2014). Of these 15 verified or accepted occurrences, 11 are from the spring (19 April-10 May) three are from the fall (16, 20, and 24 October), with one winter record in Miami-Dade in February (#2017-1216, Kratter 2018b). This species breeds in the upper Midwest (mainly Michigan) and winters mainly in the Bahamas.

TOWNSEND'S WARBLER, *Setophaga townsendi*

2018-1301 (YM). During its stay from 29 March -5 April 2018, Yve Morrell photographed this bird at 769 Grouper Trail in Key Largo (Monroe County).

This species, a medium-distance migrant in western North America, was added to the Review List in 2016. Greenlaw et al. (2014) stated that it is irregular, very rare winter visitor. It was not reported in 2016-2017.

BANANAQUIT, *Coereba flaveola*

2018-1306 (AW, PM). On 8 April, Phyllis Mansfield found and photographed this bird, which stayed until 14 April at Lori Wilson Park in Cocoa Beach (Brevard County 28.336313, -80.609272). It was photographed by Audrey Whitlock on the following day.

This species was added to the Review List in 2016. Four records were accepted in 2017, although seven different Bananaquits reported in Florida that year (eBird). Greenlaw et al (2014) listed it as an irregular casual to very rare winter visitor. In the ten years prior to 2018, eBird lists 13 records, 10 of which were documented by photographs. All previous Florida records are from southeast Florida and the Keys.

BLACK-FACED GRASSQUIT, *Tiaris bicolor*

2018-1260 (CFe, RaD). Carmen Ferreiro found and photographed a male at Long Pine Key, Everglades NP (Miami-Dade County) on 9 July 2016. It was seen by several birders during its stay until 20 August.

The FOSRC has accepted six previous records, all from southeast Florida (one each from Broward and Palm Beach counties, two each from Miami-Dade and Monroe counties). There are also three older specimen records from Miami-Dade County (Greenlaw et al. 2014). It is considered a casual winter visitor by Greenlaw et al. (2014).

SUBMISSIONS NOT ACCEPTED

BARROW'S GOLDENEYE, *Bucephala islandica*

2017-1173. This unusual record of a drake Barrow's Goldeneye was found in the freezer of a hunter from central Florida, who had recently passed away. The tag with the bird said that it had been shot at Crystal River (Citrus County) on 13 January 1998. The specimen was prepared as a mount by a local taxidermist. The submission was tabled at our 2017 meeting, but efforts to reach the taxidermist since failed. Barrow's Goldeneye has not been recorded previously in Florida, and the nearest records are from southern Virginia (eBird, AOU 1998). The Committee felt that a first state record should have a more complete paper trail. As we were unable to talk to the hunter (deceased) or even the taxidermist who prepared it, we were unable to assess the validity of the data on the tag.

ZENAIDA DOVE, *Zenaida aurita*

2018-1274. This sight report is from 15 September 2017 at Pelican Island NWR (Indian River County). The description was quite brief, and the form did not include any behavior. Thus, we did not know if the field marks described were from seeing the bird in flight, or at rest. Although the tail was well described, the diagnostic white trailing edge to the secondaries was seen only "partially." The Committee felt that with such a good view of the tail, the white secondary patch should have been more visible.

SHARP-TAILED SANDPIPER, *Calidris acuminata*

2018-1271. This juvenile shorebird was photographed on 31 August 2017 at Headquarters Pond at St. Marks NWR (Wakulla County). It has rather short

yellowish legs, a short, slightly down-curved bill, pale brown scalloping on the sides of the breast with otherwise white underparts, and dark-centered back- and scapular feathers with bright rufous and white edges. The cap is brown, streaked black, setting off a wide, whitish supercilium. Although the bird was described as "larger and a little heavier than the associated Least Sandpipers," no other birds are within the frame of the photographs. The Committee felt that this is likely a juvenile Least Sandpiper (*C. minutilla*). A Sharp-tailed Sandpiper would have longer legs, a more robust body with longer neck, a more solid rufous cap, and a more even buffy wash across the throat and breast.

Sharp-tailed Sandpiper is known from only two records and two sight reports in Florida: one collected in Miami-Dade in October 1967 (Ogden 1968, Robertson and Woolfenden 1994); one photographed in Monroe County in September 2016 (#2017-1186, Kratter 2018b); a sight report from Orange County in August 1973 (Greenlaw et al. 2014, not assessed by the FOSRC); and a sight report in Leon County in September 1995 (FOSRC 96-354; Bowman 2000). The species breeds in the Russian Arctic, and winters largely in Australia, southeast Asia, India, and islands in the south Pacific Ocean. It is regular on the Pacific Coast of North America, but very rare in eastern North America.

California Gul, *Larus californicus*

2018-1285. This subadult bird was photographed, both in flight and perched on the beach, west of the pier in Destin (Okaloosa County) on 29 October 2017. The photographs show a quite pale-backed gull with large black wedges in the outer primaries, a small mirror on p10, dark primary coverts, a mostly white tail with a faint dark subterminal band, a yellowish bill, with a dark markings on both upper and low mandibles adjacent to a pale tip, and finely gray streaked head and nape. Although the bird is reminiscent of a third-cycle California Gull in many regards, the Committee felt that this is a second-cycle winter Ring-billed Gull (*L. delawarensis*). A California Gull would have paler gray back, heavier dusky marking on the hind neck, a larger mirror on p. 10 and a small one on p. 9, and a heavier bill with the culmen being straighter (Howell and Dunn 2007).

Neotropic Cormorant, *Phalacrocorax brasilianus*

2018-1316. This bird was photographed in Dry Tortugas NP (Monroe County), 16 miles northeast of Garden Key, on 23 April 2014. Although the observer thought the bird was small and long-tailed, the Committee felt that the bird was a Double-crested Cormorant (*P. auritus*), based on the orangish (instead of dark) supra-loral region, straight (instead of v-shaped) edge to the rear border of the gular pouch, and lack of pale feathers outlining the gular pouch.

Alder Flycatcher, *Empidonax alnorum*

2018-1275. The observer submitted a description of the bird and its vocalizations, from an observation at the Palm Bay Public Library (Brevard County) on 18 September 2017. For species in the "Traill's" flycatcher complex, the Committee has decided to review only those that include audio recordings of the vocalizations. As a result we chose not to accept this submission.

Western Wood-Pewee, *Contopus sordidulus*

2018-1283. This silent bird was photographed at Dry Tortugas NP (Monroe County) on 15 November 2017. Identification of silent wood-pewees is notoriously difficult. Although the bird in this submission has some marks that favor Western (nearly all-dark lower mandible, upper wingbar much paler than lower, darker plumage, more vested look across breast), all of these are quite subjective and

variable according to light and exposure in photographs. The Committee felt that the bird photographed was not beyond the range of variation exhibited by Eastern Wood-Pewee (*C. virens*).

Florida has had only two previously accepted records of Western Wood-Pewee: a bird audio-recorded in Highlands County in June 1995 (#1995-342; Anderson 1996), and one photographed and heard by several observers in Hillsborough County in October 2014 (#2015-1059; Greenlaw 2016b).

Bahama Swallow, *Tachycineta cyaneoviridis*

2016-1123. On 20 March 2016 a kayaker observed a swallow pass overhead on the Commodore Creek Kayak Trail (Lee County). The description, although including key features of Bahama Swallow, was based on a 2-3 second observation. Features of the face were not seen, and the description does not exclude Mangrove Swallow (*T. albilinea*), which has previously occurred in Florida. The Committee felt that given the range extension (Bahama Swallow has never been seen outside coastal SE Florida) and rarity, a longer observation with better details was necessary. The votes on this submission at the 2016 and 2017 meeting were unresolved.

2018-1304. This bird was observed in Diamond Court Village in Vero Beach (Indian River County) on 2 April 2018. The rather brief description notes the metallic blue back and "v-shaped" tail, but neglects to mention the length of the tail, or the distinctive white underwing coverts of Bahama Swallow.

Six previous submissions have been accepted by the FOSRC, all from Miami-Dade County and the Florida Keys. In addition, three other records (two specimens and one photographed) from Miami-Dade County have not been evaluated by the FOSRC (Greenlaw et al. 2014).

Submissions Unresolved

Elegant Tern, *Thalasseus elegans*

2018-1319. This tern was photographed just north of the lighthouse at St. Marks NWR (Wakulla County) on 29 May 2018. The rather distant photo shows a perched tern, with a long slender orange bill, a shaggy rear crest, black reaching the eye, and a white forehead. It is much larger than the adjacent tern also perched on a piling, likely a Forster's Tern (*Sterna forsteri*). The vote–four to accept, three not to accept–was unresolved. Those voting not to accept were concerned that the bill shape is difficult to discern at that distance, the black of the crest does not reach above the eye, and that the bird may be too large in comparison with the nearby *Sterna* tern.

"Cayenne" Tern, *Thalasseus sandvicensis eurygnatha*

2018-1276. This tern was photographed on Siesta Key (Sarasota County) on 17 September 2017. It was seen and photographed a number of times by other observers as well for the next month. "Cayenne" Tern is the subspecies of Sandwich Tern that breeds in the Caribbean and South America, and has a mostly or wholly yellow bill. This individual has also been submitted to eBird as an Elegant Tern. The bird appears similar or slightly larger than adjacent Sandwich Terns, with a long dull greenish yellow bill, which is noticeably decurved. There is a bit of black in the nares and a small smudge of black along the lower mandible. The black from the somewhat shaggy rear crest continues forward around the eye. Unsurprisingly, the vote was unresolved. Two accepted it as a Cayennne Tern, three voters proposed that it may be

an Elegant Tern, and two voters questioned whether it may be an Elegant x Cabot's Sandwich Tern hybrid.

The FOSRC has previously accepted two records of Cayenne Tern, both from Sarasota County: August 2012 (#2012-912, Greenlaw 2016b) and October 2016 (#2016-1102, Kratter 2018a).

Pacific Loon, *Gavia pacifica*

2018-1307. This northbound migrant was photographed at Siesta Key (Sarasota County) on 8 April 2018. The photographs are very distant and show a non-breeding loon in flight, dark above, and white below. The flanks are distinctly dark and contrast sharply with the white belly. Details of the neck and bill are difficult to assess, although the bill appears small. In one photograph the head and neck are straight; in the other the head is slightly drooping. Two voters felt that the flank pattern eliminated Red-throated Loon (*G. stellata*), but the other five thought that a certain identification could not be reached given the quality of the photographs.

This species was added to the Review List in 2016 and one record was accepted at our 2017 meeting (#2017-1238, three in Escambia County in March-April 2017). In the 10 years prior to that meeting (2007-2017), eBird lists 18 or so occurrences for Florida; 11 of these were in Escambia County; the others were in Okaloosa (two), Franklin, Alachua (two), Levy, Brevard, and Martin. Only five of the 18 were documented by photographs, the others were sight reports. Greenlaw et al. (2014) listed it as a very rare winter visitor.

House Crow, *Corvus splendens*

2018-1320. The House Crow is resident in the Indian Subcontinent and southeast Asia. Populations have become established at several seaports across the globe, almost certainly arising from birds that arrived by riding cargo ships from their native range. House Crows have been present south of Tampa Bay in Manatee County (six birds from 2009-10a) and Sarasota County (up to four birds since at least 2001) (Greenlaw et al. 2014). Beginning in late April 2018, a House Crow in Nokomis Beach (Sarasota County) paired with a Fish Crow and nested. This bird is possibly one of the same birds present since 2001. Like other House Crows away from their native range, these birds in Florida are thought to be or have derived from birds that rode ships to deep-water ports, such as the port of Manatee.

The identification of the birds has not been questioned. According to the bylaws of the FOSRC, the individual must represent a "natural appearance", which is defined as:

The reasonably plausible appearance of a species from its home range without the intentional intervention of man. A bird which passively rides a ship or other men-made conveyance shall be considered to have occurred naturally if it is not confined or restrained at all during its passage, and if its survival en route is not based upon significant human intervention such as continual provision of food and water actually consumed. Natural Appearance need not (indeed, usually cannot) be proven; it need only be reasonably plausible based upon the biology of the species and any other known relevant factors including the circumstances of its appearance.

Thus the bylaws allow species to be added to the Official List that may have been transported here on ships, under certain conditions. One of the main products brought to the port of Manatee is tropical fruit, (http://www.portmanatee.com/about-us/port-facts/) and it seems feasible that crows could easily survive on long ocean crossings on a ship laden with tropical fruit. The question is whether this access to fruit should be considered "continual provisioning" and whether the

birds may have been "confined" in a hold or other compartment. The FOSRC vote was unresolved. Three members voting to accept considered that the definition of natural appearance had been met; four voting not to accept deemed that the appearance of House Crows in Florida was not natural because crows could not survive a long sea-crossing without provisioning.

No state or provincial Committee in the ABA area has added House Crows. They have been considered by the ABA Checklist Committee. It should be noted that other records committees may have varying definitions of natural appearance and may or may not allow some degree of ship assistance.

BROWN-CHESTED MARTIN, *Progne chalybea*

2017-1251. The single photograph of this bird, flying over the St. Johns River where it is crossed by SR 50 in Orange County on 8 June 2017, shows a rather robust hirundinid, brown above and white below with a brown chest band. The bird is apparently molting some rectrices. The bird is either a Brown-chested Martin, which would be a first record for Florida, or a Bank Swallow (*Riparia riparia*). The observer was quite sure that the bird was far larger than a Bank Swallow, but it is impossible to judge size in the photograph provided. In addition, the photograph is not very sharp, and details of important diagnostic features, such as length of the undertail coverts versus the tail, and the size of the bill are difficult to assess. In addition, the bird is at an odd posture for a flying martin, with the wings swept back, and it is difficult to see if it has the broad wings diagnostic of martins. The bill appears to be larger than in Bank Swallow, but the bird is flying away from the camera, and the Committee found some on-line photographs of Bank Swallows in similar posture that exaggerated the size of the bill. An expert on Neotropical birds felt that this one photograph was not conclusive enough to accept as a first state record. The four voting not to accept felt that a first state record needed to be better documented. We tabled this submission in 2017 to see if other photographs were available.

The Brown-chested Martin is a Neotropical species that occurs from Costa Rica south through South America, east of the Andes to central Argentina. Southern populations (*P. t. fusca*) are austral migrants, migrating in the austral winter north to the Amazon and northern South America. The nine or so records from North America, including Mexico, are assumed to be austral migrants.

KIRTLAND'S WARBLER, *Setophaga kirtlandii*

2018-1311. This bird was observed by two birders on 7 May 2018 at Ocean Bay Riverside Park in St. Lucie County. Their descriptions, which included the gray head, back, white eye arcs, yellow breast, white undertail, indistinct wingbars, and tail pumping behavior, were complete enough for five votes to accept. The two Committee members voting not to accept were concerned with an anomalous character for Kirtland's, a distinct malar, and the lack of description of the tail. The resulting vote was thus unresolved.

SUBMISSIONS TABLED

HOODED ORIOLE, *Icterus cucullatus*

2018-1326. This female oriole, present from 20 January to 9 February 2018 in Valrico (Hillsborough County) was photographed visiting feeders. The bird has a rather long bill and somewhat graduated tail, indicating that it could be a Hooded Oriole, instead of the much more expected Orchard Oriole (*I. cucullatus*). Both identifications were supported in posts to online discussions about its identity.

The Committee felt that it would be best to send the photographs to western birders who are more familiar with variation in Hooded Oriole.

Two records have been accepted previously in Florida, both from Santa Rosa County: a male October 2002 (#2002-494, Bowman 2006) and another male January 2011 (#2011-834, Kratter 2012).

Literature Cited

Anderson, B. H. 1996. Twelfth report of the Florida Ornithological Society Records Committee: 1994-1995. Florida Field Naturalist 24: 122-134.

AOU [American Ornithologists' Union]. 1998. Check-list of North American Birds. 7th Ed. Allen Press, Lawrence, Kansas.

Bailey, H. H. 1925. The Birds of Florida. The Williams and Wilkins Co., Baltimore, Maryland.

Banks, R. C. 2000. The Cuban Martin in Florida. Florida Field Naturalist 28:50-52.

Bowman, M. C. 1995. Sighting of Masked Duck ducklings in Florida. Florida Field Naturalist 23:35.

Bowman, R. 2000. Thirteenth report of the Florida Ornithological Society Records Committee: 1996, 1997, 1998, 1999, and 2000. Florida Field Naturalist 28:138-160.

Bowman, R. 2006. Fifteenth report of the Florida Ornithological Society Records Committee: 2003-2005. Florida Field Naturalist 34:69-102.

Chesser, R. T., K. J. Burns, C. Cicero, J. L. Dunn, A. W. Kratter, I. J. Lovette, P. C. Rasmussen, J. V. Remsen, Jr., J. D. Rising, D. F. Stotz, and K. Winker. 2017. Fifty-second supplement to the American Ornithologists' Union Check-list of North American Birds. Auk 134:751-773.

Greenlaw, J. S. 2016b. Twenty-fifth report of the Florida Ornithological Society Records Committee: 2015. Florida Field Naturalist 44:116-131

Greenlaw, J. S., and A. W. Kratter. 2007. Sixteenth report of the Florida Ornithological Society Records Committee: 2006. Florida Field Naturalist 35:49-59.

Greenlaw, J. S., B. Pranty, and R. Bowman. 2014. The Robertson and Woolfenden Florida Bird Species: An Annotated List. Special Publication No. 8, Florida Ornithological Society, Gainesville.

Howell, S. N. G., and J. Dunn. 2007. Gulls of the Americas. Houghton Mifflin, Boston, Massachusetts.

König, C., and F. Weick. 2008. Owls of the World. 2nd Ed. Yale University Press, New Haven, Connecticut.

Kratter, A. W. 2008. Nineteenth report of the Florida Ornithological Society Records Committee: 2008. Florida Field Naturalist. 38:150-174.

Kratter, A. W. 2010. Twenty-sixth report of the Florida Ornithological Society Records Committee: 2015-16. Florida Field Naturalist. 46:8-28.

Kratter, A. W. 2018a. Twenty-sixth report of the Florida Ornithological Society Records Committee: 2015-16. Florida Field Naturalist. 46:8-28.

Kratter, A. W. 2018b. Twenty-seventh report of the Florida Ornithological Society Records Committee: 2016-17. Florida Field Naturalist 46:96-117.

Kratter, A. W., and S. Small. 2007. First record of Northern Fulmar (*Fulmarus glacialis*) in Florida, and notes on other north Atlantic seabird specimen records in 2004-2005. Florida Field Naturalist 35:22-25.

Lockwood, M. W., and B. Freeman. 2014. Handbook of Texas Birds. Texas A & M Press, College Station.

McNair, D. B., and T. E. Lewis. 1997. Vaux's Swifts overwinter at a roost in Apalachicola, Florida. Florida Field Naturalist 25:54-57.

McNair, D. B., and T. E. Lewis. 1998. Fourth verified record of Vaux's Swift (*Chaetura vauxi*) in Florida. Alabama Birdlife 44:20-21.

OGDEN, J. C. 1968. Sharp-tailed Sandpiper collected in Florida. Auk 85:692.

PYLE, P. 1997. Identification Guide to North American Birds, Part I. Slate Creek Press. Point Reyes Station, California.

ROBERTSON, W. B., AND G. E. WOOLFENDEN. 1992. Florida Bird Species: An Annotated List. Special Publication No. 6, Florida Ornithological Society, Gainesville.

SMITH, P. W., AND S. A. SMITH. 1998. A Zenaida Dove in Florida, with comments on the species and its appearance here. Florida Field Naturalist 17:67-69.

STEVENSON, H. M., AND B. H. ANDERSON. 1994. The Birdlife of Florida. University Press of Florida, Gainesville.

WEBBER, T., AND C. T. COLLINS. 1995. Recordings verify that Vaux's Swifts visit Florida in winter. Florida Field Naturalist 23:25-29.

WRIGHT, J. S., AND P. C. WRIGHT. 1997. Stygian Owl in Texas. Field Notes 51:950-952.

Florida Field Naturalist 47(2):82-83, 2019.

REVIEW

The Birds of Escambia, Santa Rosa, and Okaloosa Counties, Florida, with Bird Migration, Weather, and Fallout by Robert A. Duncan and Lucy R. Duncan. 2018. Revised 3rd Edition. Privately Printed. 157 pages. $16.00. Order from Lucy Duncan (614 Fairpoint Drive, Gulf Breeze, Florida 32561-4112), with $3.17 postage.

For 50 years, Robert and Lucy Duncan have closely studied and meticulously recorded the birdlife of the three most western Florida counties. This book is the third (previous editions were in 1988 and 2000) and certainly the most thorough and polished summary of their efforts. When they began their work in 1968, they were fortunate to have a solid ornithological footing to stand on. Francis Marion Weston (1887-1969), called "the Dean of Gulf Coast ornithologists" (Lowery 1975), lived in Pensacola from 1916 until his death. He monitored birds and mentored younger ornithologists including Curtis L. Kingsbery, George H. Lowery, Jr., Burt L. Monroe, Jr., and many others, mostly it seems, through counseling on earning the Boy Scout Bird Study merit badge. Weston (1965) published a summary of 48 years of observations in *A Survey of the Birdlife of Northwestern Florida,* a 147-page compendium that gave the Duncans an authoritative and up-to-date reference when they began their bird activities.

It also provides them in the present work with a convenient and valuable perspective from which to note changes in birdlife from "Weston's time" (1916-1965) to the present. Weston listed 336 species of birds; the Duncans' present work has 424 "verified" species, an increase of 88. Many times these variations are attributed to habitat alterations of long or short duration, natural or anthropogenic; attention to geographic changes is a notable feature of this book. And change is not a surprise, for the three counties have probably a hundred or more miles of constantly eroding and accreting bay and surf salt-water margins; they sit in the bulls-eye for tropical storms and hurricanes that cause catastrophic upheavals in minutes, and bring with them wind-blown birds from more southerly lands and seas. Range expansions, extirpations, introductions, and increased observer coverage are important factors and so is technology: modern field guides, superb optics, and digital photography have been transformative (the Duncans cite a contemporary of Weston's who said that "the binoculars Weston used most of his life were woefully inadequate, and he never owned a telescope").

Species accounts provide extreme dates, status (uncommon, casual, etc., with terms defined, and whether breeding), and often notes on habitats, historic changes in distribution and abundance, and maximum counts. For accidentals, all records are listed along with observers and voucher evidence. Species are also listed in a 15-page bar graph showing seasonal occurrence and relative abundance. In "Where to Find Birds" the Duncans provide an eight-page section on habitats and protected locations with detailed driving instructions.

In the second part of the book the Duncans examine migration as experienced on the north coast of the Gulf of Mexico, something Robert Duncan wrote about in a previous publication (1994). The present version first summarizes the history of Gulf coast migration study and the evolution of recognizing the coexistence of trans-Gulf (flights directly across the width of the Gulf) and circum-Gulf (flights around the coasts) bird migration in both the spring and fall (Stevenson 1957), as well as the interplay of meteorological factors and biological mechanics of each, all the while citing the pertinent literature. Migration is a complex event at the north Gulf coast, where the trans-Gulf migrants would either be starting (fall) or ending (spring) a perilous over-water flight

of some 550± miles, requiring a non-stop flight of 14 or more hours. There are a lot of moving parts, but weather is the key element, triggering flights and sometimes bringing disaster upon them.

A disaster for the birds might be an inadvertent delight for birders if a fallout results (fallout is defined in the book as "a large number of birds landing in an isolated location during a short period of time"). The Duncans explain the intricate series of events that lead to these fabulous spectacles, and provide tools and hints to enable birders to predict fallouts on their own. For example, weather buoy 42001, bobbing in the Gulf 180 nautical miles south of Louisiana, provides wind and other data useful for estimating how spring flights from Yucatan will fare[1]; the Duncans tell you how to access that information.

I can highly recommend this book to any bird student in Florida and in neighboring Gulf states for the current status of many species, as well as a guide for understanding the complexities of migration in the region. Accolades to the Duncans, charter members and great friends of FOS for producing such a valuable reference.

I thank John Murphy for his many helpful suggestions on this review.

Literature Cited

Duncan, R. A. 1994. Bird Migration Weather and Fallout, Including the Migrant Traps of Alabama and Northwest Florida. Privately printed.

Lowery, G. H., Jr. 1975. In Memoriam: Francis Marion Weston. Auk 92:793-796.

Stevenson, H. M. 1957. The relative magnitude of trans-Gulf and circum-Gulf spring migration. Wilson Bulletin 69:39-77.

Weston, F. M. 1965. A Survey of the Birdlife of Northwestern Florida. Bulletin of Tall Timbers Research Station 5:1-147.

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[1]Athough at this writing, buoy 42001 itself is "adrift."

Florida Field Naturalist 47(2):84-95, 2019.

FIELD OBSERVATIONS

Fall Report: August-November 2018.—This report consists of significant bird observations compiled by the Field Observations Committee (FOC). Electronic submissions to the FOC should be in the following format: species, number of individuals, age and sex of the bird(s), color morph if applicable, location (including county), date, observer(s), and significance. Seasons are winter (December-February), spring (March-May), summer (June-July), and fall (August-November). Submit observations to regional compilers within two weeks after the close of each season, or to the state compiler within one month. Addresses of the compilers follow this report.

Sight-only observations are considered "reports" while only those observations supported by verifiable evidence (photographs, video or audio recordings, or specimens) are called "records." Species for which documentation is required by the FOC and by the FOS Records Committee (FOSRC; <fosbirds.org/official-florida-state-bird-list>) are marked here with an asterisk (*). A county designation (in italics) accompanies the first-time listing of each site in this report. Abbreviations in this report are: AFB = Air Force Base, AFR = Air Force Range, CA = Conservation Area, EOS = end of season, m. obs. = many observers, NERR = National Estuarine Research Reserve, NP = National Park, NSRA = North Shore Restoration Area, NWR = National Wildlife Refuge, SF = State Forest, SP = State Park, STA = Stormwater Treatment Area, STF = sewage treatment facility, WMA = Wildlife Management Area, and N, S, E, W etc., for compass directions. Bold-faced entries denote birds newly reported or verified in Florida, or record numbers. +Photographs or video- or audio-recordings archived by the FOC are identified by a plus (+).

Summary of the Fall Season

State Review Species listed in this report include five American Black Ducks, a Harlequin Duck, three Key West Quail-Doves, a Zenaida Dove, a Ruff, two Long-tailed Jaegers, a Black-legged Kittiwake, one Sabine's Gull, an Elegant Tern, a well-photographed Double-toothed Kite, a Golden Eagle, two Yellow-bellied Flycatchers, many Willow Flycatchers, and several Alder Flycatchers, a Say's Phoebe, two Thick-billed Vireos, a Yellow-green Vireo, one European Robin, a Violet-green Swallow, two Bahama Mockingbirds, one Lapland Longspur, a Snow Bunting, several MacGillivray's Warblers, a Kirtland's Warbler, one Mourning Warbler, a Black-throated Gray Warbler, one Townsend's Warbler, one Bananaquit, a Black-faced Grassquit, and a Spotted Towhee.

Species Accounts

Black-bellied Whistling-Duck: 70 at Rabun Road (*Jefferson*) 19 Sep (M. Smith, R. Emond).

Fulvous Whistling-Duck: 1 juvenile at T. M. Goodwin Waterfowl Management Area (*Brevard*) 8 Nov (D. Hartgrove).

Snow Goose: 1 at Spring Lake Hills (*Seminole*) 1 Nov (P. Hueber); 2 white morph (1 immature) at The Villages (*Sumter*) 16-19 Nov (A. Horst et al.); 1 blue morph at Huguenot Memorial Park (*Duval*) 24 Nov (+K. Dailey); 2 blue morph at Twin Oaks Tennis Club (*Indian River*) 25 Nov (J. Davidson).

Egyptian Goose: 1 at Gainesville (*Alachua*) throughout the season (C. Poli et al.).

Gadwall: 1 at Lake Apopka Wildlife Drive (*Orange*) 27 Oct (A. Stutz).

EURASIAN WIGEON: 1 at Sweetwater Wetlands Park (*Alachua*) 30 Oct (R. Norton et al.).

AMERICAN WIGEON: 11 offshore Tom Renick Park (*Volusia*) 2 Oct (P. Hueber); 3 at Black Point Wildlife Drive (*Brevard*) 6 Oct (C. Ferro); 1 at Lake Apopka Wildlife Drive 6 Oct (J. Mileyka); 1 at Fort De Soto Park (*Pinellas*) 5 Nov (+R. Smith).

*AMERICAN BLACK DUCK: 5 at St. Marks NWR (*Wakulla*) 18 Nov-EOS (+D. Morrow).

MOTTLED DUCK: 9 at Lake Apopka Loop Trail (*Lake*) 5 Sep (T. Hanson, m. obs.).

CINNAMON TEAL: 1 male at Fort De Soto Park 11 Oct (+C. Sheeter); 1 male at Lake Apopka Wildlife Drive 18 Nov (+C. Newton, m. obs.).

NORTHERN PINTAIL: 1 at Sweetwater Wetlands Park 28 Sep (R. Rowan).

GREEN-WINGED TEAL: 250 offshore Tom Renick Park 11 Nov (H. Robinson).

CANVASBACK: Up to 4 (2 males/2 females) at Lake Apopka Wildlife Drive 4-30 Nov (P. Hueber, m. obs.); 1 at Gainesville 22 Nov-EOS (J. O'Connor et al.).

REDHEAD: 490 offshore Tom Renick Park 23 Nov (H. Robinson).

RING-NECKED DUCK: 1 female at Fellsmere WMA (*Indian River*) 23 Aug (G. DelPizzo).

LESSER SCAUP: 1 at Lake Apopka Wildlife Drive 27 Oct (J. Mileyka).

COMMON EIDER: 1 at Rodney Ketcham Park (*Brevard*) 4 Aug and 20 Sep (M. Kelly, m. obs.); 1 at Jetty Park (*Brevard*) 16 Oct, 13-27 Nov (+C. Williams, m. obs.); 1 at 1565 SR A1A (*Brevard*) 21 Nov (D. Fulton).

*HARLEQUIN DUCK: 1 at Tom Renick Park 6 Nov (S. Krah).

SURF SCOTER: 2 at Castaway Cove (*Indian River*) 16 Aug (W. Johnson); 3 offshore Eldora Hammock (*Volusia*) 1 Nov (E. Hopkins); 1 offshore Tom Renick Park 4 Nov (S. Krah); up to 44 offshore at Apollo Beach (*Volusia*) 5-24 Nov (D. LaGrange, m. obs.); 7 offshore at Visitors Center (*Volusia*) 6-25 Nov (+L. Mathis); up to 8 females at Mosquito Lagoon (*Volusia*) 5 Nov (M. Brothers); 5 at Halifax Drive (*Volusia*) 6, 21 Nov (+D. Young); 2 females at Tomoka SP (*Volusia*) 7 Nov (+M. Brothers); 3 at Las Olas Beach Club (*Brevard*) 12 Nov (R. Prentki); 1 at Philippe Park (*Pinellas*) 12-14 Nov (+B. Lane, m. obs.); 1 at Tram Road Holding Ponds (*Leon*) 14 Nov (R. Lengacher); 1 at Sweetwater Wetlands Park 23 Nov (R. Rowan et al.); up to 20 at Riverside Pavilion Park (*Volusia*) 26-30 Nov (A. Hull, m. obs.); 1 at Huguenot Memorial Park (*Duval*) 27 Nov (+S. Murphy); 1 at Castaway Cove (*Indian River*) 28 Nov (W. Johnson).

WHITE-WINGED SCOTER: 2 at Alligator Point (*Franklin*) 3 Nov (+J. Murphy); 8 at Fort Pickens (*Escambia*) 4 Nov (B. Duncan, L. Duncan); up to 5 offshore at Apollo Beach 6-22 Nov (+L. Mathis, m. obs.); 3 at Biolab Road (*Brevard*) 11 Nov (P. Hueber, m. obs.); 1 at Gulf Breeze (*Gulf*) 11 Nov (B. Duncan); 1 at Eastman/Taminco Sanctuary (*Santa Rosa*) 19 Nov (L. Kelly); 2 at Riverside Pavilion Park 22-30 Nov (D. LaGrange, m. obs.); 2 at Pensacola Beach (*Escambia*) 23 Nov (D. Muth).

BLACK SCOTER: 120 offshore at Daytona Beach (*Volusia*) 30 Oct (N. Frade); 300 at Navarre Beach (*Santa Rosa*) 11 Nov (D. Whipple); 4,200 offshore Tom Renick Park 12 Nov (H. Robinson); 8 at Philippe Park 15 Nov (B. Kaempfer); 18 at Indian Rocks Beach (*Pinellas*) 15 Nov (+R. Smith); up to 6 at Fort De Soto Park 16-18 Nov (+R. Smith, B. Hoffman, D. Alvarez); 300 at Pensacola Beach (*Escambia*) 22 Nov (D. Muth); 8 at King's Bay (*Citrus*) 24 Nov-EOS (B. Cooke et al.).

LONG-TAILED DUCK: 1 offshore Apollo Beach 17 Nov (G. Williams, m. obs.).

BUFFLEHEAD: 1 at Lake Apopka Wildlife Drive 17-30 Nov (S. Mitcham, m. obs.); 165 at Courtney Campbell Causeway (*Pinellas*) 24 Nov (+B. Lane); 1 at Bill Frederick Park (*Orange*) 26 Nov (S. Daughtrey).

COMMON GOLDENEYE: 2 offshore Tom Renick Park 27 Nov (H. Robinson).

HOODED MERGANSER: 2 at Canaveral National Seashore Vista #5 (*Brevard*) 25-26 Oct (J. Eager, m. obs.); 1 female at Fort De Soto Park 18 Nov (+D. Alvarez).

RED-BREASTED MERGANSER: 1 female at Lake Apopka Wildlife Drive 24 Nov (P. Hueber, m. obs.); 1 at Sweetwater Wetlands Park 30 Nov (M. Manetz).

RUDDY DUCK: 1 at Orlando Wetlands Park (*Orange*) 10 Oct (M. Keim).

American Flamingo: 2 at Snake Bight Canoe Launch (*Monroe*) 11 Aug (N. Frade, N. Salino, J. Montes de Oca); 1 at Canaveral National Seashore Vista #8 and Vista #5 (*Brevard*) 25-26 Oct (+M. Harris, m. obs.); 1 at Apollo Beach 9-19 Nov (+P. Hueber, m. obs.); 1 at St. Marks NWR 1 Nov-EOS (+K. Miller).

Pied-billed Grebe: 43 at Lake Jackson (*Leon*) 27 Nov (D. Bryan).

Horned Grebe: 3 at Courtney Campbell Causeway 29 Oct (B. Lane).

Common Ground-Dove: 15 at Molino (*Escambia*) 25 Nov (J. Yuhasz).

*Key West Quail-Dove: 1 male at Cape Florida Banding Station (*Miami-Dade*) 7 Oct (M. Porcelli, M. Avello, +R. Diaz), details to FOSRC; 1 at Lantana Nature Preserve (*Palm Beach*) 16-17 Oct (E. Ray, m. obs.); 1 at Dr. Von D. Mizell-Eula Johnson SP (*Broward*) 27 Oct-4 Nov (M. Berney).

White-winged Dove: 1 at Sandalwood (*Duval*) 22 Oct (*fide* K. Dailey).

*Zenaida Dove: 1 at West Kendall Agricultural Fields (*Miami-Dade*) 1 Aug-19 Sep (m. obs.).

Yellow-billed Cuckoo: 1 at Crowley Museum and Nature Center (*Sarasota*) 4 Aug (D. Webb); 10 at Castaway Cove 5-10, 22 Nov (W. Johnson); 1 at Apollo Beach 9 Nov (+P. Hueber, m. obs.); 1 at Trimble Park (*Orange*) 11 Nov (J. House); 1 at Lake Sylvan Lake Park (*Seminole*) 11 Nov (B. Bailo); 1 at Gleason Park (*Brevard*) 17 Nov (I. Muro, m. obs.); 1 at Masaryktown (*Hernando*) 20 Nov (D. Love); 1 at Sweetwater Wetlands Park through 27 Nov (S. Robinson et al.).

Black-billed Cuckoo: 1 at Sawgrass Lake Park (*Pinellas*) 9 Sep (+D. Alvarez); 1 at Apalachee Regional Park (*Leon*) 13 Oct (+J. Hartung); 1 at Indian River Lagoon Preserve SP (*Brevard*) 2 Nov (M. Harris, m. obs.).

Smooth-billed Ani: Up to 4 at Browns Farm Road (*Palm Beach*) 5 Aug-15 Sep (B. Rapoza, m. obs.); 1 at Lucky Hammock, Frog Pond WMA (*Miami-Dade*) 19 Aug (L. Manfredi); 1 at Dr. Von D. Mizell-Eula Johnson SP 10 Nov (S. Kaplan, m. obs.); 1 at Loxahatchee NWR (*Palm Beach*) 11 Nov-EOS (m. obs.).

Groove-billed Ani: 1 at Winding Waters Natural Area (*Palm Beach*) 24 Nov-EOS (C. Weber, Dan O'Malley, m. obs.).

Common Nighthawk: 1 at Black Hammock Wilderness Area (*Seminole*) 23 Oct (L. Lilja); 1 at Tallahassee (*Leon*) 17 Nov (D. Bryan).

Chuck-will's-widow: 1 at Black Hammock Wilderness Area 23-24 Oct (L. Lilja).

Eastern Whip-poor-will: 1 at Alligator Point 17 Nov (J. Murphy).

Chimney Swift: 6 at Gulf Breeze 6 Nov (B. Duncan, L. Duncan).

Chaetura sp.: Up to 5 at Gainesville 25 Nov-EOS (S. Ewing, A. Kratter et al.).

Buff-bellied Hummingbird: 1 at Pace (*Santa Rosa*) 22 Sep (G. Sasser).

Black Rail: 1 heard at Three Lakes WMA (*Osceola*) 5 Aug (J. Eager, m. obs.); 1 heard at Canaveral Marshes CA (*Brevard*) 20 Nov (G. Williams).

Virginia Rail: 1 at Bayou Grande (*Escambia*) 9 Aug (A. Forster).

Gray-headed Swamphen: 1 at Sweetwater Wetlands Park 21 Oct-3 Nov (G. Israel et al.); 1 at Lake Apopka Wildlife Drive 3-30 Nov (A. Wurster); 1 at Lake Placid (*Highlands*) 29 Nov (T. Towles).

Common Gallinule: 60 at International Paper Wetlands (*Escambia*) 19 Sep (J. Callaway, B. Callaway).

Limpkin: 6 chicks at Paynes Prairie Preserve SP (*Alachua*) 25 Nov (J. Hintermister).

Black-necked Stilt: 1 at Lake Apopka Wildlife Drive 16-29 Sep, 14 Oct, 27 Nov (P. Hueber); 1 at Orlando Wetlands Park 21 Nov (+M. Keim, m. obs.).

American Oystercatcher: 2 at Fort Pickens 3 Sep (J. Callaway, B. Callaway, G. Sasser); 1 at Paynes Prairie Preserve SP 20 Oct (E. Thompson).

American Golden-Plover: 1 at Tom Renick Park 12 Aug (K. Ramos).

Semipalmated Plover: 1 at Astor Park Sewage Holding Ponds (*Lake*) 8 Sep (D. Richard); 2 at Lake Apopka North Shore Trail 8 Nov (J. Mileyka).

Piping Plover: 1 at Castaway Cove 16 Aug (W. Johnson); 1 at Turtle Trail Beach (*Indian River*) 21 Aug (+B. Capie); 1 at Forster Beach 23 Aug (G. Mina).

Upland Sandpiper: 1 at Lake Apopka Wildlife Drive 11-12 Aug (+P. Hueber, m. obs.).

Long-billed Curlew: 1 at Anclote Key Three Rooker Bar (*Pinellas*) 15 Sep and 14 Oct (+J. Sigismondi); 1 at Honeymoon Island SP (*Pinellas*) 6 Oct (+T. Mast et al.); 1 at Fred Howard Park (*Pinellas*) 10 Oct (+D. Fraser, B. Cochrane) were all presumed to be the same individual.

*Hudsonian Godwit: 1 at Browns Farm Road 14 Sep (C. Weber); 1 at Honeymoon Island SP 5-8 Oct (+D. Sauvageau, m. obs.); 1 at East Gator Creek (*Brevard*) 31 Oct-1 Nov (+M. Harris, m. obs.).

Marbled Godwit: 1 at Big Talbot Island SP-Spoonbill Pond 4 Sept-6 Oct (D. Foster) and 3 there 7-8 Oct (K. Dailey).

Ruddy Turnstone: 5 at Orlando Wetlands Park 9-15 Sep (K. Hamblett, m. obs.).

*Ruff: 1 at Browns Farm Road 16 Sep (C. Weber et al.).

Sanderling: 2 at Lake Apopka Wildlife Drive 31 Aug (P. Hueber, m. obs.).

Dunlin: 1 at Sweetwater Wetlands Park 31 Oct-2 Nov (M. Manetz, J. Hintermister, B. Shea, et al.); 1 at Sweetwater Wetlands Park 30 Nov (J. Mays).

White-rumped Sandpiper: 1 at Destin (*Okaloosa*) 25 Aug (B. Purdy); 1 at Okaloosa County STF (*Okaloosa*) 16 Sep (M. Swan); 1 at Fort De Soto Park 19 Sep (+P. Plage, J. Clayton).

Buff-breasted Sandpiper: 1 at Lake Apopka Wildlife Drive 12-18 Aug (P. Hueber, m. obs.).

Pectoral Sandpiper: 1 at Fort De Soto Park 1 Aug (+D. Sauvageau); 1 at Gandy Beach (*Pinellas*) 16 Aug (+C. Gjervold); 1 at Fort De Soto Park 6 Sep (+R. Smith); 1 at Anclote Key Three Rooker Bar 13 Sep (+J. Sigismondi); 2 at Fort De Soto Park 14 Sep (+R. Smith, S. Tavaglione); 1 at Fort De Soto Park 4 Nov (+D. Alvarez).

Solitary Sandpiper: 1 at Wekiva Springs SP (*Orange*) 10 Nov (+K. Rigling, m. obs.); 1 at Wedgefield School (*Orange*) 15 Nov (M. Rozmarynowycz).

Red-necked Phalarope: 1 offshore at Tom Renick Park 3 Sep (S. Simmons).

*Long-tailed Jaeger: 1 at Ocean Bay Natural Area (*St. Lucie*) 30 Aug (+J. Eager, P. Mansfield); 1 at Jetty Park 17 Sep (+S. Jones).

*Black-legged Kittiwake: 1 at Naval Air Station, Pensacola (*Escambia*) 10 Sep (J. Pfeiffer).

*Sabine's Gull: 1 at North Redington Beach (*Pinellas*) 24 Oct (+J. Liechty).

Bonaparte's Gull: 1 at Fort De Soto Park 2 Nov (+R. Smith).

Franklin's Gull: 1 at St. Marks NWR 3 Nov (+J. O'Connell); 2 at Riverview Park Pier (*Indian River*) 5 Nov (D. Simpson).

Herring Gull: 1 at Lake Apopka Wildlife Drive 20 Oct (J. Mileyka).

Lesser Black-backed Gull: 1 at Destin 9 Oct (M. Swan, S. Hobson); 1 at Fort Walton Beach (*Okaloosa*) 27 Nov (C. Porch).

Glaucous Gull: 1 at Huguenot Memorial Park (*Duval*) 23 Nov (K. Dailey).

Great Black-backed Gull: 1 at Fort Pickens 3 Sep (J. Callaway, B. Callaway, G. Sasser); 1 immature at Fort De Soto Park 15 Sep (+M. James).

Brown Noddy: 5 offshore Sebastian Inlet SP (*Brevard*) 28 Aug (M. McGreal).

Sooty Tern: 5 offshore NOAA 080418 (*Brevard*) 4 Aug (D. Gochfield).

Bridled Tern: 1 at Lake Jackson (*Leon*) 11 Oct (+J. O'Connell, R. Gundy); 1 at Newnans Lake (*Alachua*) 11 Oct (A. Kent, G. Kent et al.).

Caspian Tern: 2 at Lake Apopka Wildlife Drive 28 Sep (+J. Sullivan, m. obs.).

Black Tern: 1 at Lake Apopka Wildlife Drive 10-31 Aug, 5-6 Oct (+P. Hueber, m. obs.); 3 at Newnans Lake 11 Oct (A. Kent, G. Kent et al.).

Common Tern: 70 at St. George Island SP (*Franklin*) 2 Sep (R. Cassidy); 300 at Outback Key (*Pinellas*) 19 Sep (R. Smith, E. Plage, P. Plage); 6 at Newnans Lake 11 Oct (A. Kent, G. Kent et al.); 1 at Magnolia Park (*Orange*) 30 Nov (P. Hueber).

Arctic Tern: 1 at St. George Island SP 22 Aug (+E. Thompson).

Royal Tern: 1 at Newnans Lake 11 Oct (M. Zhao).

Sandwich Tern: 1 at Newnans Lake 30 Aug (R. Rowan); 1 at Newnans Lake 11 Oct (J. Mays).

*Elegant Tern: 1 at Safety Harbor (*Pinellas*) 30 Sep-4 Oct (+M. James et al.).

Black Skimmer: 1 at Lake Apopka Wildlife Drive 18-26 Aug (J. Mileyka, m. obs.); 1 at Sweetwater Wetlands Park 30 Aug-1 Sep (D. Rohan et al.).

White-tailed Tropicbird: 1 offshore 75 miles ENE Ponce Inlet (*Volusia*) 4 Aug (T. Johnson, D. Gochfield).

Red-throated Loon: 6 at Frank Rendon Park 19 Nov (H. Robinson); 1 at Ponce Inlet (*Volusia*) 28 Nov (M. Brothers).

Common Loon: 1 at Magnolia Park 30 Nov (P. Hueber).

Black-capped Petrel: 2 (1 adult/1 juvenile) offshore NOAA 080418 (*Brevard*) 4 Aug (D. Gochfield).

Cory's Shearwater: Up to 3 offshore at Tom Renick Park 3 Sep, 2 Oct, (+P. Hueber, m. obs.); 2 offshore at Tom Renick Park 14, 23 Nov (H. Robinson).

Great Shearwater: 1 at Pensacola Pass (*Escambia*) 5 Aug (J. Pfeiffer); 2 offshore at Tom Renick Park 2 Oct (+P. Hueber, m. obs.); 1 offshore at Tom Renick Park 14 Nov (H. Robinson).

Wood Stork: 1 at Garcon Point (*Santa Rosa*) 17-18 Nov (L. Kelly).

Magnificent Frigatebird: 5 at Newnans Lake 11 Oct (B. Shea, E. Amundson et al.).

Masked Booby: 1 at International Paper Wetlands 22 Oct (J. Callaway, B. Callaway).

Brown Booby: 1 at Anastasia SP (*St. Johns*) 24 Aug (S. Weiss); 1 offshore at Indialantic Beach (*Brevard*) 29 Aug (T. Ledford); 1 at Anclote Key Three Rooker Bar 5 Sep (+J. Sigismondi); 1 offshore at Castaway Cove 13 Sep (W. Johnson); the last of the dozen or so seen at Philippe Park the past two years was last seen 13 Nov (B. Lane).

Northern Gannet: 1,085 offshore at Tom Renick Park 11 Nov (H. Robinson); 44 at Indian Rocks Beach 27 Nov (+R. Smith).

Brown Pelican: 1 at Paynes Prairie Preserve SP 11 Oct (J. Mays).

American Bittern: 1 at Sweetwater Wetlands Park 22 Aug (R. Rowan); 1 at Lake Apopka Wildlife Drive 31 Aug (S. Mitcham); 1 at Ritch Grissom Memorial Wetlands at Viera (*Brevard*) 4 Sep (P. Marvin).

Least Bittern: 1-4 at International Paper Wetlands 16-29 Nov (J. & B. Callaway).

Great Blue Heron: 1 (white morph) at Veterans Memorial Island Sanctuary (*Indian River*) 24 Sep (W. Johnson).

Yellow-crowned Night-Heron: 1 at Lake Lotus (*Seminole*) 30 Sep (G. DelPizzo).

Glossy Ibis: 8 at Eastman/Taminco Sanctuary 6 Aug (L. Kelly, L. Goodman).

White-faced Ibis: 1 at Masters Tract Stormwater Treatment (*St. Johns*) 17 Nov (+D. Reed).

Roseate Spoonbill: 1-4 at Walnut Hill (*Santa Rosa*) 3-29 Aug (D. Stangeland, J. Yuhasz); 1 at E Pensacola 9 Aug (C. Sheldon); 1 at Fort Pickens 16 Sep (D. Muth).

Osprey: 44 at Fort Pickens 13 Aug (B. Duncan, L. Duncan).

Swallow-tailed Kite: 2 at Fort De Soto Park 4 Sep (B. Hoffman).

White-tailed Kite: 1 at Avon Park AFR (*Highlands*) 26 Nov (P. Blake).

Snail Kite: Up to 15 at Paynes Prairie Preserve SP throughout the season (R. Rowan et al.); 2 at Lake Apopka Wildlife Drive 19-26 Aug (+J. Mileyka); 1 at Shiloh Marsh Road (*Volusia*) 25 Nov (K. Rigling); 1 female at Orlando Wetlands Park 25 Nov (+K. Fisher).

Mississippi Kite: 1 at County Road 452/Emerald Avenue (*Lake*) 1 Aug (D. Richard); 1 at Ponkam Road (*Orange*) 2 Aug (A. Hull); 1 at Lake Apopka Wildlife Drive 4 Aug (K. Rigling, m. obs.); 1 at Carlton Village Park (*Lake*) 6 Aug (A. Horst); 1 at Quale Grove Road (*Lake*) 8 Aug (P. Seigler); 1 at Sunshine Tree Boulevard (*Seminole*) 12 Aug (+G. Williams); 1 at Fort De Soto Park 22 Sep (+P. Plage).

***Double-toothed Kite**: 1 at Chassahowitzka WMA (*Hernando*) 15 Oct (A. Hansen, B. Hansen).

Broad-winged Hawk: 1 at Genius Drive Nature Preserve (*Orange*) 23 Sep (T. Rodriguez); 1 immature at Ferndale Preserve (*Lake*) 12 Oct (G. Quigley); 1 at Lake Apopka Wildlife Drive 13 Oct (J. Mileyka); 1 at Harris Corporation (*Brevard*) 14 Oct (C. Ferro); 2 at Boyd Hill Nature Preserve (*Pinellas*) 17 Oct (+J. Clayton); 2 at Fort De Soto Park 21 Oct (+B. Hoffman, M. James, R. Smith); 2 immature at Maritime Hammock Sanctuary (*Brevard*) 2 Nov (M. Harris, m. obs.); 1 at Chassahowitzka WMA 19 Nov (K. Rosse).

Short-tailed Hawk: 1 light morph at Water Conservation II (*Lake*) 3 Aug (P. Hueber); 1 light morph at River Lakes CA (*Brevard*) 13 Aug (J. Giunta); 1 dark morph at Ferndale Preserve 25 Aug, 15 Sep (G. Quigley, m. obs.); 1 light morph at Enchanted Forest (*Brevard*) 25 Aug (B. Alm); 1 light morph at Eustis FWC Lab 28 Aug (D. Richard); 1 light morph at Duncan Drive (*Lake*) 28 Aug (D. Richard); 1 at Westside Industrial Park (*Duval*) 23 Sep (+D. Foster); 1 at Green Cove Springs (*Clay*) 10 Oct (+S. Raduns); 1 at Tallahassee 11 Oct (K. NeSmith); 3 dark morph, 1 light morph at Walt Disney World area (*Orange*) 15 Oct (J. Thomton); 1 at Spring Hill (*Hernando*) 10 Nov (S. Spenceley); 1 at Floral City (*Citrus*) 16 Nov (C. Nelson, K. Spilios); 1 light morph at Orlando Wetlands Park 22, 29 Nov (N. Turley, m. obs.).

Swainson's Hawk: 1 at Gainesville 27 Oct (R. Rowan); 1 at Okaloosa County STF 4 Nov (M. Swan, S. Hobson); 1 at Paynes Prairie Preserve SP 18 Nov (F. Goodwin, I. Goodwin).

Red-tailed Hawk: 1 at Lake Apopka Wildlife Drive 4 Aug (S. Collins); 1 (Krider's) at Lake Apopka Wildlife Drive 17-27 Nov (+S. Collins, m. obs.).

*Golden Eagle: 1 at WPA Road (*Jefferson*) 21 Nov (+D. Asbell).

Barn Owl: 1 at Bald Point SP (*Franklin*) 28 Oct (S. Parrish, +J. Murphy).

Burrowing Owl: 4 at Melbourne International Airport (*Brevard*) 1 Aug (J. Koon).

Hairy Woodpecker: 1 at SJRWMD field office (*Seminole*) 4 Oct (G. Williams); 1 at Padgett Creek Ranches (*Indian River*) 13 Oct (G. Mina); 1 at St. Sebastian River Preserve SP 4 Nov (C. Fisher).

American Kestrel: 3 at Longwood 1-12 Aug (+G. Williams).

Merlin: 1 at Lake Apopka Wildlife Drive 18 Aug (J. Mileyka); 1 at Destin 25 Aug (B. Purdy).

Peregrine Falcon: 8 at St Sebastian River Preserve SP 2 Sep (C. Ferro).

White-eyed Parakeet: 1 at Palm Grove Neighborhood (*Volusia*) 26 Nov (A. Hull).

Rose-ringed Parakeet: 1 continued at 922 State Road 50 (*Lake*) 3 Aug (+P. Hueber).

Olive-sided Flycatcher: 1 at Gulf Breeze 14 Aug (B. Duncan); 1 at Gulf Breeze 21 Sep (B. Duncan, L. Duncan); 1 at W Pensacola 30 Sep (J. Lloyd).

Eastern Wood-Pewee: 1 at Mead Botanical Gardens (*Orange*) 13 Aug (M. Sharpe); 1 at Sun City Center 26 Aug (D. Webb); 1 at WSEG Boat Ramp (*Brevard*) 7 Nov (+S. Jones); 1 at Lori Wilson Park 11 Nov (P. Mansfield); 1 at Gulf Breeze 14 Nov (B. Duncan, L. Duncan).

*Yellow-bellied Flycatcher: 1 at Turkey Creek Sanctuary (*Brevard*) 12 Oct (+B. Scheuerman); 1 at Oakland Nature Preserve (*Orange*) 13 Oct (+M. Hill).

*Alder Flycatcher: 1 at Lake Apopka Loop Trail (*Lake*) 26 Aug-Sep 1 (L. Mathis, m. obs.); 1 at Lake Jackson 31 Aug (+J. O'Connell); 1 at Paynes Prairie Preserve SP 26 Aug-11 Oct (J. Hintermister et al.).

*Willow Flycatcher: 2 at Paynes Prairie Preserve SP 25 Aug (F. Goodwin, I. Goodwin); 1 at Lake Apopka Loop Trail 26 Aug-15 Sep (L. Mathis, m. obs.); 1 at Green Mountain Overlook and Trailhead (*Lake*) 15 Sep (K. Rigling); 1 at Emery-Riddle Campus (*Volusia*) 20 Sep (S. Krah).

Traill's Flycatcher: 1 at Kathryn Abbey Hanna Park (*Duval*) 25 Sep (T. Rohtsalu).

Least Flycatcher: 1 at Fort De Soto Park 15 Sep (+J. Gibson et al.); 1 at Lake George WMA-Nine Mile Point (*Volusia*) 18 Sep (D. LaGrange); 1 at Highway 158A (*Jefferson*) 27 Oct (R. Cassidy); 1 at International Paper Wetlands 16 Nov (J. Callaway, B. Callaway).

*Say's Phoebe: 1 at Bald Point SP 5 Oct (J. Murphy).

Vermilion Flycatcher: 1 at Fort Pickens 8 Oct (J. Cobb, L. Cobb); 1 at St. Marks NWR 21 Oct (D. Asbell); 1 at Lake Apopka Wildlife Drive 9-30 Nov (J. Mileyka, m. obs.); 1 at Paynes Prairie Preserve SP 19 Nov (T. Anderson).

Ash-throated Flycatcher: 1 at Bald Point SP 30 Oct (+J. Murphy); 1 at River Lakes CA (*Brevard*) 16-30 Nov (+J. Armstrong, m. obs.); 1 at Gulf Breeze 16 Nov (B. Duncan); 1 at Okaloosa County STF 19-20 Nov (B. Stanley); 1 at Fort Pickens 30 Nov (B. Duncan, L. Duncan).

Great Crested Flycatcher: 1 at Orlando Wetlands Park 4-6 Nov (K. Hamblett, m. obs.).

Tropical/Couch's Kingbird: 1 at Sawgrass Recreational Park (*Broward*) 9 Aug (D. Scolaro); 1 at St. Marks NWR 15-19 Aug (M. Johnstone, +J. O'Connell, D. Morrow).

Western Kingbird: 1 at Gulf Breeze 26 Aug (B. Duncan); 1 at Fort De Soto Park 13-29 Sep (*fide* R. Smith); 1 at Fort De Soto Park 9 Oct (+B. Hoffman); 1 at Lake Apopka Wildlife Drive 28 Oct (K. Hamblett, m. obs.); 1 at Walt Disney World area 30 Oct (S. Livingston); 1 at Canal Street 7 Nov (S. Simmons); 1 at Maritime Hammock Sanctuary 10 Nov (+T. Ledford); 1 at Fort Pickens 30 Nov (B. Duncan, L. Duncan).

Eastern Kingbird: 4 at Sun City Center 2 Sep (D. Webb); 1 at Pelican Island NWR (*Indian River)* 6 Oct (D. Sutherland).

Gray Kingbird: 1 at Lake Apopka Wildlife Drive 4 Aug (K. Hamblett).

Scissor-tailed Flycatcher: Up to 5 at Fort De Soto Park 27-29 Oct (+M. James et al., m. obs.); 1 at Isla Del Sol (*Pinellas*) 27 Oct (W. Tallyn); 1 at Tierra Verde (*Pinellas*) 29 Oct-5 Nov (+B. Hoffman); 1 at E Clearwater 1 Nov (M. James); 1 at Lake Apopka Wildlife Drive 10 Nov (+P. Hueber, m. obs.); 1 at Keene Road (*Orange*) 11 Nov (L. Mathis, m. obs.); 1 at T. M. Goodwin Waterfowl Management Area 25 Nov (D. Sutherland, m. obs.).

*Thick-billed Vireo: 1 at Bill Baggs Cape Florida SP (*Miami-Dade*) 23 Aug (L. Gles); 1 at Bill Baggs Cape Florida SP 1 Sep (+M. Avello, M. Porcelli, C. Porcelli).

Yellow-throated Vireo: 1 at Mead Botanical Gardens 7-9 Nov (+M. Sharpe).

Blue-headed Vireo: 1 at Bald Point SP 11 Sep (J. Murphy).

Philadelphia Vireo: 1 at Oak and Palm Hammock Trails (*Brevard*) 7 Oct (+M. Harris); 1 at Lori Wilson Park 12 Oct (P. Mansfield); 1 at Bama Avenue 12 Oct (L. Friedland); 1 at Fort De Soto Park 12-13 Oct (+J. Gibson et al.); 3 at Gainesville 18-20 Oct (G. Kent, A. Zions); 1 at Newnans Lake SF 23 Oct (F. Goodwin); 1 at Kathryn Abbey Hanna Park (*Duval*) 22 Oct (*fide* K. Dailey); 1 at Oak and Palm Hammock Trails 27 Oct (S. Simmons); 1 at John Bonner Park (*Pinellas*) 6 Nov (K. Nelson); 1 at *Alachua* 17 Nov (B. Carroll. B. Enneis).

Warbling Vireo: 1 at Reddie Point Preserve (*Duval*) 16 Sep (K. Dailey).

Red-eyed Vireo: 1 at Gulf Breeze 20 Nov (B. Duncan, L. Duncan).

*Yellow-green Vireo: 1 at Gulf Breeze 20-21 Oct (B. Duncan, L. Duncan).

*European Robin: 1 at Dr. Von D. Mizell-Eula Johnson SP 14-15 Oct (+M. Berney).

*Violet-green Swallow: 1 at Lake Jackson 22 Oct (+J. O'Connell).

Northern Rough-winged Swallow: 70 southbound at Fort De Soto Park 4 Nov (D. Alvarez).

Bank Swallow: 9 at T. M. Goodwin Waterfowl Management Area 8 Nov (D. Hartgrove); 1 at Marl Bed Flats (*Seminole*) 23 Nov (S. Simmons).

Cave Swallow: 2 at Walnut Hill 24 Aug (J. Yuhasz); 2 at Fort De Soto Park 11 Sep (R. Smith); 2 at Alligator Point 13 Nov (J. Murphy); 4 at George R. Kennedy Memorial Park (*Volusia*) 27 Nov (D. LaGrange).

Barn Swallow: 1,681 in 1 hour at Fillmore Avenue (*Brevard*) 24 Aug (J. Eager); 8 at Gemini Springs Park (*Volusia*) 16 Nov (C. Brelsford); 4 at Brumley Road Trailhead (*Seminole*) 24 Nov (S. Simmons).

Carolina Chickadee: 1 at Buck Lake CA (*Brevard*) 7, 22 Aug (G. Williams, m. obs.).

Red-breasted Nuthatch: 2 at Bald Point SP 12 Oct (J. Murphy); 1 at Honeymoon Island SP 12-27 Oct (J. Sigismondi, +M. James, C. Yilmaz); 1 at Huguenot Memorial Park

(*Duval*) 27 Oct (+K. Dailey); 1 at Guana Tolomato Matanzas NERR (*St. Johns*) 25 Oct (+D. Reed); 2 at Guana River WMA (*St. Johns*) 30 Oct (+C. Elder); 1 at Lake Sylvan Lake Park (*Seminole*) 3-12 Nov (+P. Hueber, m. obs.); 1 at WSEG Boat Ramp 7, 21-25 Nov (+M. Harris, m. obs.); 1 at Boyd Hill Nature Preserve 7 Nov-EOS (+R. Smith); up to 3 at Gainesville 13 Nov-EOS (G. McKie, S. Lasseter et al.).

Blue-gray Gnatcatcher: 1 leucistic at Masters Tract, Hastings (*St. Johns*) 12 Nov (+ D. Reed et al.).

Golden-crowned Kinglet: 1 at Gemini Springs Park 20 Sep (R. Peterson).

Ruby-crowned Kinglet: 1 at Gainesville 20 Aug (R. Bartlett).

Gray-cheeked Thrush: 1 at Guana Tolomato Matanzas NERR 6 Nov (+C. Elder); 1 at W Hornbeam Drive (*Seminole*) 7 Nov (S. Collins); 1 at Castaway Cove 8 Nov (W. Johnson).

Swainson's Thrush: 10 at Castaway Cove 5-10 Nov (W. Johnson).

Hermit Thrush: 1 at Black Hammock Wilderness Area (*Seminole*) 23 Oct (L. Lilja, m. obs.).

American Robin: 2 at Tallahassee 17 Aug (R. Cassidy); 1 at I-95 (3 mi S of Exit 215) (*Brevard*) 26 Aug (C. Ferro).

Gray Catbird: 1 at Black Point Wildlife Drive 19 Aug (J. Howe).

*Bahama Mockingbird: 1 at Adams Key, Biscayne NP (*Miami-Dade*) 13 Aug (L. Manfredi, P. Manfredi); 1 at Spanish River Park (*Palm Beach*) 10 Oct (K. Miller).

Cedar Waxwing: 1 at Gainesville 13 Sep (T. Anderson); 8 at Wekiva Springs SP 13 Nov (L. Mathis).

Pin-tailed Whydah: 1 female at Lake May Reserve (*Lake*) 20 Oct (B. Matasick, m. obs.).

Scaly-breasted Munia: 55 at Pace (*Santa Rosa*) 16 Nov (D. Stangeland).

Purple Finch: 1 at Gulf Breeze 25 Oct (B. Duncan, L. Duncan); 1 at Gainesville 12-13 Nov (R. Rowan); 3 at Mimosa Court (*Seminole*) 15 Nov (H. Melanson); 8 at Marianna (*Jackson*) 16 Nov (+M. Cousin).

Pine Siskin: 1 at Bald Point SP 30 Oct (J. Murphy); 1 at Marsh Landing Restaurant (*Indian River*) 28 Nov (D. Simpson); 1 at Pinellas Point 30 Nov (+E. Haney).

American Goldfinch: 1 female at Westchester Avenue (*Orange*) 15 Oct (M. Piercy).

*Lapland Longspur: 1 at Huguenot Memorial Park 24-25 Nov (+K. Dailey).

*Snow Bunting: 1 at Huguenot Memorial Park 25 Nov (+K. Dailey, D. Foster).

Ovenbird: 1 at Sun City Center 2 Sep (D. Webb); 1 at Gulf Breeze 3 Nov (J. Caffrey, H. Caffrey).

Worm-eating Warbler: 1 at Highlands Hammock SP (*Highlands*) 12 Oct (D. Simpson, A. Starck); 1 at Gemini Springs Park 3 Nov (C. Brelsford, m. obs.).

Northern Waterthrush: 1 at Sun City Center (*Hillsborough*) 5 Aug (D. Webb).

Golden-winged Warbler: 6 at *Alachua* 17 Sep-12 Oct (J. Mays et al.); 1 at John Bonner Park (*Pinellas*) 19 Sep (S. Aversa, K. Nelson); 1 at Brooker Creek Preserve 7 Oct (+M. James); 1 at Fort De Soto Park 12 Oct (+K. Casey, J. Casey); 2 at Oak Hammock Trails 12 Oct (+M. Harris).

Blue-winged Warbler: 2 at Eastman/Taminco Sanctuary 11 Aug (L. Kelly, B. Furlow); 1 at Largo (*Pinellas*) 6 Sep (T. Young); 1 at Dunedin Hammock (*Pinellas*) 10 Sep (+B. Cochrane); 1 at Sawgrass Lake Park 16 Sept (D. Alvarez); 1 at John Taylor Park (*Pinellas*) 18 Oct (+S. Aversa); 1 at John Bonner Park 6 Nov (K. Nelson).

"Brewster's" Warbler: 1 at Key Vista Park (*Pasco*) 7 Sep (+D. Bowman); 1 at Gainesville 8 Oct (J. Hintermister).

Swainson's Warbler: 1 at Oak Hammock 23 Aug (+A. Hull); 1 at Lake Lotus 30 Sep (G. DelPizzo); 1 at George C. McGough Park (*Pinellas*) 9-15 Sep (+M. James, m. obs.); 1 at Dunedin Hammock 30 Sep (+N. Langwald); 1 at Guana Tolomato Matanzas NERR 25 Oct (+C. Elder).

Tennessee Warbler: 1 at Archbold Biological Station (*Highlands*) 12 Oct (C. Fredricks); 1 at Riomar Bay II (*Indian River*) 4 Nov (W. Johnson); 1 at Airport Lakes Park (*Orange*) 5 Nov (+L. Munoz).

Orange-crowned Warbler: 1 at Newnans Lake SF 12-13 Oct (R. Rowan, J. Donsky).

Nashville Warbler: 1 at Fort De Soto Park 17-23 Sep (+J. Sigismondi, m. obs.); 1 at Sawgrass Lake Park 26 Sep (+F. Myerson); 1 at Newnans Lake 2-6 Oct (M. O'Sullivan); 1 at Pine Island (*Brevard*) 13 Oct (P. Mansfield); 1 at Maritime Hammock Preserve (*Brevard*) 24 Oct, 8 Nov (P. Mansfield); 1 at Round Island Conservation Area (*Indian River*) 27 Oct (W. Johnson); 1 at Castaway Cove 28 Oct (+W. Johnson); 1 at Gemini Springs Park 3 Nov (C. Brelsford, m. obs.); 1 at Gulf Breeze 17 Nov (B. Duncan, L. Duncan); 1 at Veteran's Park 18 Nov (C. Ferro, m. obs.).

*MacGillivray's Warbler: 1 at Busch Wildlife Sanctuary (*Palm Beach*) 28-29 Sep (m. obs.); 1 at Tropical Park (*Miami-Dade*) 2-3 Oct (J Montes de Oca, m. obs.); 1 singing male at Key West Nature Park/Rest Beach (*Monroe*) 4 Nov (C. Goodrich).

*Mourning Warbler: 1 at Pensacola 6 Oct (J. Lloyd).

American Redstart: 1 at Sun City Center 19 Aug (D. Webb).

*Kirtland's Warbler: 1 at Washington Oaks Gardens SP (*Flagler*) 21 Oct (+R. Geisler).

Cape May Warbler: 1 at Faulkner Street (*Volusia*) 4 Sep (D. Ulmer); 1 at Veteran's Memorial Park (*Okaloosa*) 10 Oct (B. Purdy); 12 at *Alachua* 7 Oct-10 Nov (M. Manetz et al.); 2 at Floral City 19 Nov (G. Harrison).

Cerulean Warbler: 3 at *Alachua* 17 Aug-11 Sep (R. Rowan, C. Poli, K. Collingwood); 1 at John Bonner Park 23 Aug (T. Young, S. Aversa); 1 at Key Vista Park 7 Sep (+D. Bowman).

Northern Parula: 1 at Fort Pickens 21 Nov (D. Muth).

Magnolia Warbler: 1 at Lake Apopka Wildlife Drive 31 Aug (P. Hueber); 1 at Orlando Wetlands Park 4, 14 Nov (+K. Hamblett); 1 at Jungle Trail (*Indian River*) 4 Nov (+W. Johnson).

Bay-breasted Warbler: 12 at Sawgrass Lake Park 12 Oct (+J. Clayton); 1 at Archbold Biological Station 12 Oct (C. Fredricks); 1 at Lake Sylvan Lake Park 4 Nov (+A. OHern); 1 at Airport Lakes Park (*Orange*) 5 Nov (+L. Munoz); 2 at Guana Tolomato Matanzas NERR 6 Nov (+C. Elder); 1 at Floral City 7-25 Nov (G. Harrison); 1 male at Maritime Hammock Preserve 10 Nov (+S. Jones, m. obs.); 1 at Gulf Breeze 16-24 Nov (B. Duncan, L. Duncan).

Blackburnian Warbler: 1 at Sawgrass Lake Park 23 Aug (S. Tavaglione, R. Smith); 1 at Archbold Biological Station 12 Oct (C. Fredricks); 1 female at Breezewood Park (*Volusia*) 15 Nov (+D. LaGrange).

Chestnut-sided Warbler: 1 at Highlands Hammock SP 12 Oct (+D. Simpson, A. Starck); 2 at Archbold Biological Station 12 Oct (C. Fredricks); 1 at Drigger's Road (*Highlands*) 13 Oct (C. Fredricks).

Blackpoll Warbler: 1 at Jungle Trail 4 Nov (+W. Johnson); 1 at Sylvan Lake Park 4 Nov (+S. Collins, m. obs.); 2 females at Castaway Cove 5-8 Nov (W. Johnson); 1 female at Maritime Hammock Preserve 10 Nov (+S. Jones, m. obs.).

Black-throated Blue Warbler: 1 at Pine Forest Cemetery (*Lake*) 26 Aug (M. Buccieri); 1 male at Maitland Community Park (*Orange*) 12-19 Nov (C. Brelsford); 1 male at Mead Botanical Gardens 13 Nov (+M. Sharpe).

Palm Warbler: 1 at Oakland Nature Preserve 2 Sep (S. Burgess); 1 at Fort De Soto Park 6 Sep (E. Plage).

*Black-throated Gray Warbler: 1 at St. George Island SP 6 Oct (+M. Forehand, K. Forehand-van Der Linde).

*Townsend's Warbler: 1 at A. D. Barnes Park 11-15 Sep (R. Featherly, m. obs.).

Black-throated Green Warbler: 1 at Guana Tolomato Matanzas NERR 19 Nov (+C. Elder).

Canada Warbler: 1 at Kathryn Abbey Hanna Park (*Duval*) 30 Sep (*fide* K. Dailey); 1 at Mead Botanical Gardens 6-11 Oct (L. Mathis, m. obs.); 1 at Bay Harbor Terrace (*Indian River*) 10 Oct (D. Sutherland); 1 at Lori Wilson Park 12 Oct (P. Mansfield); 1

male at Sawgrass Lake Park 12 Oct (+S. Tavaglione et al.); 1 at Gulf Breeze 20 Oct (B. Duncan, L. Duncan).

Wilson's Warbler: 1 at Captain Forster Hammock Preserve (*Indian River*) 10 Oct (D. Simpson); 1 at Catfish Avenue (*Volusia*) 12 Oct (+T. Lee); 1 at Gemini Springs Park 25 Oct, 16 Nov (+W. Rivera, m. obs.); 1 at Crystal Lake (*Volusia*) 28 Oct (A. Hull); 1 at Masters Stormwater Tract 21 Nov (+A. Tanner); 1 at Paynes Prairie Preserve SP 26-28 Sep (M. Manetz, J. Donsky).

Yellow-breasted Chat: 1 at Sweetwater Wetlands Park 20 Nov (R. Rowan et al.); 1 at Alligator Point 18 Nov (J. Murphy); 1 at Spring Lake Park 29 Nov (P. Hueber).

*Bananaquit: 1 adult at A. D. Barnes Park 2-4 Nov (C. Ferreiro, m. obs.).

*Black-faced Grassquit: 1 young male at Bill Baggs Cape Florida SP 19-27 Oct (m. obs.).

*Spotted Towhee: 1 at Dr. Von D. Mizell-Eula Johnson SP 14-25 Nov (S. Andescavage, +P. Andescavage, m. obs.).

Bachman's Sparrow: 1 immature at A. D. Barnes Park (*Miami-Dade*) 15-16 Sept (A. Hernandez, m. obs.).

Clay-colored Sparrow: 1 at Sweetwater Wetlands Park 13 Sep-18 Oct (F. Goodwin, F. Lee, G. Price); 1 at Bald Point SP 27 Sep (+J. Murphy); 1 at Romar Drive (*Indian River*) 6 Oct (W. Johnson); 1 at Fort Pickens 8 Oct (P. Doggrell); 1 at Captain Forster Hammock Preserve 10 Oct (D. Simpson); 2 at Huguenot Memorial Park 27-28 Oct (+A. Tanner); 1 at Black Point Wildlife Drive 1 Nov (+S. Jones); 1 at SJRWMD field office, Geneva 14 Nov (G. Williams); 1 at Destin 24 Nov (M. Swan, S. Hobson).

Lark Sparrow: 1 at Little League Park, Fellsmere (*Indian River*) 5-6 Sep (+D. Simpson); 1 at Bald Point SP 9 Sep (J. Murphy); 1 at Lehigh Acres (*Hendry*) 27 Oct (+T. Obrock).

Seaside Sparrow: 1 at North Beach Street (*Volusia*) 19 Nov (M. Brothers).

Song Sparrow: 1 at South Lake CA (*Brevard*) 25 Nov (+M. Harris, m. obs.).

Lincoln's Sparrow: 1 at Lake May Reserve (*Lake*) 20 Oct (B. Matasick, m. obs.); 1 at Ellis Acres Reserve (*Lake*) 3 Nov (G. Quigley); 1 at Gulf Breeze 27 Oct-10 Nov (B. Duncan, L. Duncan); 1 at Lake Apopka North Shore Trail 21 Nov (A. Hull).

White-throated Sparrow: 1 at Treasure Island feeder (*Pinellas*) 30 Oct-3 Nov (+P. Waton); 1 at Pine Flatwoods Trail (*Brevard*) 21 Nov (+M. Harris).

White-crowned Sparrow: 1 at Lake Apopka Wildlife Drive 26 Oct (S. Mitcham).

Dark-eyed Junco: 2 at Tallahassee 24 Nov (+R. Lengacher).

Summer Tanager: 1 female at Lake Sylvan Lake Park 4 Nov (J. Leavens, m. obs.); 1 at Sunset Drive (*Orange*) 9 Nov (W. Cantlebary); 1 South Elm Street (*Seminole*) 20 Nov (L. Martin); 1 at Lake Apopka Wildlife Drive 25 Nov (G. Becker).

Scarlet Tanager: 1 at S Ranger Boulevard (*Orange*) 10 Aug (E. Bracey); 1 at Gainesville 28 Aug (M. Bruce); 1 at Turkey Creek Sanctuary 12 Oct (B. Scheuerman).

Western Tanager: 1 at Spring Lake Hills (*Seminole*) 9 Aug (+P. Hueber, m. obs.); 1 at S Jacksonville residence for third winter (*Duval*) 16 Nov (+J. Austin).

Northern Cardinal: 17 at Gulf Breeze 9 Sep (B. Duncan, L. Duncan).

Rose-breasted Grosbeak: 1 at Highlands Hammock SP 12 Oct (D. Simpson); 1 at Turkey Creek Sanctuary 12 Oct (B. Scheuerman).

Painted Bunting: 1 at Gulf Breeze 15-29 Oct (B. Duncan, L. Duncan); 1 at Fort Pickens 27 Oct (P. Doggrell); 1 at Pensacola 11 Nov (M. McGahan).

Dickcissel: 1 at John Taylor Park 24 Sep (+S. Aversa, K. Nelson, T. Young); 1 at Bald Point SP 6 Oct (J. Murphy); 1 at Lake Seminole Park 26 Oct (W. Tallyn); 1 at Guana River WMA 30 Oct (+A. Tanner); 1 at Gainesville 18 Nov (C. Faulhaber).

Bobolink: 6 at Newnans Lake SF 23 Aug (R. Rowan); 1 at St. Marks NWR 29 Nov (+D. Morrow).

Yellow-headed Blackbird: 1 at Okaloosa County STF 16 Sep (M. Swan); 1 at Lake Apopka Wildlife Drive 28 Sep-5 Oct (P. Hueber, m. obs.); 1 at Hague (*Alachua*) 27 Oct (M. Manetz).

Rusty Blackbird: 1 at South Lake CA 19 Nov (+M. Harris); 1 at Catfish Avenue 26 Nov (T. Lee); 7 at St. Marks NWR 29 Nov (D. Morrow).
Boat-tailed Grackle: 37 at Floridatown (*Santa Rosa*) 14 Nov (B. Duncan, L. Duncan).
Shiny Cowbird: 1 at Brighton Bay (*Pinellas*) 5 Aug (+M. Burns et al.); 1 at N St. Petersburg 13 Aug (+J. Clayton).
Orchard Oriole: 1 at W St. Petersburg (*Pinellas*) 9 Aug (P. Plage).
Baltimore Oriole: 1 at Dunedin Hammock 9 Sep (+K. Duncan).

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(1) be double-spaced throughout, including table- and figure captions;

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(3) include capitalized standard English names for all birds, but lower case for English names of other organisms;

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FIRST FLORIDA RECORD OF DOUBLE-TOOTHED KITE (*Harpagus bidentatus*)

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The Double-toothed Kite (*Harpagus bidentatus*) is a widespread Neotropical raptor, occurring as a resident in lowland forests from central Mexico south through Central America and Amazonia to central Brazil and Bolivia (AOU 1998). In eastern Mexico it occurs north to northern Oaxaca and the Yucatán Peninsula, with a few sight reports from southern Veracruz (eBird). On the west coast of Mexico it occurs north to Nayarit (eBird). The only previous record north of Mexico was a second-year bird photographed by David Hanson at Boy Scout Woods on High Island in Galveston County, Texas, on 4 May 2011. That record was accepted by the Texas Bird Records Committee of the Texas Ornithological Society (Carpenter 2012) and then added to the American Birding Association's Checklist (Pranty et al. 2012).

On 15 October, 2018, Al Hansen and BH–"the observers"–were birding in the Chassahowitzka Wildlife Management Area in northwestern Hernando County, Florida. In the distance, they spotted a bird of prey perched in a dead pine tree, silhouetted against the sky. The sun was on their right shoulders, and they always had a clear view of the bird. The site was on Three Bridge Road, 0.3 km north of the intersection with Rattlesnake Camp and Scrub Island roads. (28.621148, -82.580357). Habitat in the area is mixed scrubby flatwoods, with a hardwood swamp immediately north of the tree where the bird was perched.

With a 82-mm Nikon Fieldscope III, with a 38-power fixed lens, the observers studied the bird for 25 minutes and took 112 in-focus photos of it. They moved closer and continued to scope and photograph the bird. Finally, when directly underneath the bird, BH was able to photograph its ventral side (Fig. 1).

The bird appeared to be smaller, and the back and wings much darker, than a Red-shouldered Hawk (*Buteo lineatus*), the common *Buteo* in central Florida forests and which the observers see frequently. At the time the observers first spotted the bird, it had its back to them, and it preened during the entire time they watched it. With the scope they noticed a large white eye ring on the bird's medium gray head. There was a noticeable contrast of color between the head and the back. The back looked black, with large splotches of white. The black tail (Fig. 2), not as long as an *Accipiter* sp., had three narrow white bands, as well as a very narrow white terminal band. The primary extension of the wings appeared to reach the most posterior of the narrow white bands. When the bird lifted its tail while preening, they saw a large patch of white feathers, presumably the undertail coverts. These white feathers are also visible in the photos that BH took of the front of the bird. While directly underneath the bird, BH was able to

Figure 1. Double-toothed Kite at Chassahowitzka Wildlife Management Area, 15 October 2018. Note the diagnostic vertical, central throat stripe, compact size, and broad white and rufous barring of underparts characteristic of the northern subspecies *H. b. fasciatus*. Photograph by Bev Hansen.

Figure 2. Double-toothed Kite at Chassahowitzka Wildlife Management Area, 15 October 2018. Note the dark-gray back, short black tail with three thin white bars, and heavily barred outer primaries. Photograph by Bev Hansen.

see the bird's underparts, which were densely barred pale rufous and white from the throat to the vent (Fig. 1). The chin was white, bisected by a thin, dark vertical line (Fig. 1). A few of the photographs show the unusual tomial feature for which the bird is named: the cutting edge of the upper mandible has two tooth-like protrusions (Fig. 3). The base of the bill was ivory, and the remainder of the bill was dark gray. The iris was orange. The feet were golden, with black claws. When the wings were spread, the underside of the primaries showed dark and white bars (Fig. 2), but the folded wing looked dark.

The bird never vocalized while the observers were present.

Identification of raptors can often be difficult. In the field, the observers immediately realized that the bird was not an *Accipiter* sp.,

Figure 3. Double-toothed Kite at Chassahowitzka Wildlife Management Area, 15 October 2018. Note the diagnostic double "tooth" on the maxilla, from which the English and scientific names are derived. Photograph by Bev Hansen.

because the tail was too short (Fig. 2). The small size eliminated any *Buteo* species. The thin white stripes on the tail contrasting with a dark background reminded the observers of a Merlin (*Falco columbarius*), but the shape of the bird's head and gray color of the head with the white eye ring eliminated Merlin as a possible identification. While watching the bird, they consulted their field guide (Dunn 2006) but were unable to identify it. Later that day, after consulting several other field guides of North American birds and finding no match, BH submitted three photographs and a description of the bird to Birdbrains, a list server for central Florida birders. Within half an hour, four people had replied, all identifying the bird as a Double-toothed Kite. The observers looked at photos of Double-toothed Kite on eBird and other Internet sources, and concluded that this was the bird that they had seen.

Diagnostic features for Double-toothed Kite are the small size, compact shape with shortish dark tail with thin white bands, the dark central throat stripe, barred reddish underparts, and barred undersides

of the primaries (Ferguson-Lees and Christie 2001, Schulenberg et al. 2007). The bird was certainly not a juvenile, as juveniles are browner above and whiter below with vertical dark streaking, as opposed to the horizontal rufous and gray barring on adults. The bird was likely a male, judging by the limited amount of rufous on the sides of the neck and breast (Ed Kwater, pers. comm.). Of the two subspecies, *H. d. fasciatus* is by far the more likely, occurring from Mexico south to Colombia and west Ecuador (Ferguson-Lees and Christie 2001). The nominate subspecies occurs only in South America east of the Andes. The plumage matches *fasciatus* as well, with the underparts showing more pale gray interspersed between rufous bars (Ferguson-Lees and Christie 2001). The kite appears to have had a mixture of worn central rectrices and more fresh outer rectrices. The primaries look lightly and evenly worn, and do not show any signs of damage that may occur on individuals that have been held captive. That afternoon and for several days afterward, many birders scoured the area. On Tuesday, 16 October, Will Chatfield-Taylor reported a brief sighting of a Double-toothed Kite from Chassahowitzka Wildlife Management Area (Florida Ornithological Society Records Committee files), but other birders in the vicinity did not see the bird.

While the origin of this Double-toothed Kite may never be known, it should be noted that Hurricane Michael headed north over the Gulf of Mexico a few days earlier. On 2 October the National Hurricane Center began tracking a low-pressure system east-southeast of the Yucatan Peninsula. By 7 October this had become a tropical depression, and the next day it quickly intensified in force. It passed west of Hernando County on 9-10 October before making landfall at Mexico Beach, Bay County, Florida, as a category 4 hurricane on 10 October.

Double-toothed Kites appear to be mostly sedentary, although some breeders on Trinidad may leave seasonally for mainland Venezuela (ffrench 1991). Other than Trinidad and the Bocas del Toro Archipelago in northwest Panama, Double-toothed Kites appear to be largely absent from most islands off the coast of Central America, such as the Bay Islands in Honduras, or Cozumel in Mexico. There are no records from the Greater or Lesser Antilles. EBird lists one observation for each of the three islands off the Pacific coast of the Azuero Peninsula in central Panama (Cebaco, Coiba, and Canal de Afuera). None of these observations includes details or documentation, however. Although the lack of long-distance migration and few records from coastal islands may indicate a decreased likelihood of vagrancy in this species, the previous occurrence in Texas illustrates that this species has some capacity to wander. The species does soar to great heights on occasion (Ferguson-Lees and Christie 2001), increasing the likelihood that especially strong winds, e.g., from a storm like Michael, could blow

it off course, and perhaps out into the Gulf of Mexico, where it could wander until reaching Florida's Gulf Coast. The record in Texas could also have resulted from trans-gulf vagrancy. On accepting the Texas record, the American Birding Association Checklist Committee (CLC) wrote "Much of that committee's debate concerned origin, particularly the means by which a supposedly sedentary forest species might have reached coastal Texas. TBRC's [Texas Bird Records Committee] files indicate that the species does fly at high altitudes at times, and Jesse Fagan has reported to the TBRC that some movements of this species occur during the dry season in El Salvador. It is worth noting that the species is unrecorded at the "River of Raptors" hawk watch in Veracruz. It is also worth noting that ffrench (1991) reported Double-toothed Kites on Trinidad primarily from January to June and wondered if the species migrates to the mainland. If such crossings occur, then perhaps the Texas bird arrived at High Island via a trans-Gulf crossing rather than by proceeding up the east coast of Mexico and Texas. Because the species is not kept for falconry and is essentially unknown in captivity, the TBRC treats this occurrence as pertaining to a naturally occurring vagrant, a decision endorsed unanimously by the ABA CLC. (Pranty et al. 2012)."

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Literature Cited

AOU [American Ornithologists' Union]. 1998. Check-list of North American Birds, 7th ed. American Ornithologists' Union, Washington, D. C.

Carpenter, E. 2012. Texas Bird Records Committee report 2012. <https://www.texasbirdrecordscommittee.org/home/report-archives/2012-annual-report>.

Dunn, J. 2006. National Geographic Field Guide to the Birds of North America, 5th ed., National Geographic Society, Washington, D. C.

Ferguson-Lees, J., and D. A. Christie. 2001. Raptors of the World. Houghton Mifflin, Boston, Massachusetts.

ffrench, R. 1991. A Guide to the Birds of Trinidad and Tobago, 2nd ed. Cornell University Press, Ithaca, New York.

Pranty, B., J. L. Dunn, K. L. Garrett, D. D. Gibson, M. J. Iliff, M. W. Lockwood, R. Pittaway, and D. A. Sibley. 2012. 24th Report of the ABA Checklist Committee: 2012. Birding 44:30-37.

Schulenberg, T. S., D. F. Stotz, D. F. Lane, J. P. O'Neill, and T. A. Parker III. 2007. Birds of Peru. Princeton University Press, Princeton, New Jersey.

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NEW HOST RECORDS AND RANGE EXTENSIONS FOR HELMINTH PARASITES FROM WADING BIRDS IN SOUTHEASTERN FLORIDA

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Abstract: Six species of wading birds collected from wildlife centers throughout South Florida were dissected for parasites. Twenty-six species of parasites represent new host records and five parasite species represent new geographic range extensions.

Key words: Acanthocephalans, nematodes, trematodes, Ardeidae, Threskiornithidae.

Wading birds feed on a variety of food including other birds (particularly chicks), small mammals, and a wide range of aquatic food items that include fish, amphibians, and invertebrates. The majority of wading bird species are associated with aquatic or semi-aquatic habitats that range from freshwater marshes and meadows to the shores of marine environments (Brooke and Birkhead 1991; Schreiber and Burger 2001; Lovette and Fitzpatrick 2016). In southeastern Florida, wading birds are ubiquitous and can be found using a wide range of habitats ranging from the Everglades to the islands of the Florida Keys. Consequently, these bird species can provide valuable information on foraging ecology across a wide geographic scope.

The intent of this study was to assess the endoparasite diversity of common wading birds in southeastern Florida. We examined Great Egrets (*Ardea alba*), Great Blue Herons (*Ardea herodias*), Green Herons (*Butorides virescens*), Yellow-crowned Night-Herons (*Nyctanassa violacea*), Black-crowned Night-Herons (*Nycticorax nycticorax*), and White Ibis (*Eudocimus albus*).

Materials and Methods

Bird specimens were collected frozen (-10° C) from four wildlife rehabilitation centers in Florida: South Florida Wildlife Center in Fort Lauderdale, Pelican Harbor Seabird Station in Miami, Florida Keys Wild Bird Rehabilitation Center in Tavernier, and Key West Wildlife Center in Key West (Table 1). The bird host specimens either died while receiving treatment at the rehabilitation centers or were euthanized upon admittance.

Table 1. Total number of each wading bird species dissected for this study and the number of specimens obtained from each wildlife center.

Species	n	South Florida Wildlife Center	Pelican Harbor Seabird Station	Florida Keys Wild Bird Center	Key West Wildlife Center
Great Egret	18	6	1	11	[none]
Great Blue Heron	27	6	2	17	2
Green Heron	9	[none]	1	8	[none]
Yellow-crowned Night-Heron	4	4	[none]	[none]	[none]
Black-crowned Night-Heron	3	[none]	[none]	3	[none]
White Ibis	21	7	3	10	1

Individual birds were thawed in a 4° C refrigerator. Specimens were dissected following protocols adapted from McLaughlin (2001). The dissection process began by cutting through the sternum and removing internal organs for visual endoparasite examination. The trachea, esophagus, proventriculus, liver, kidneys, and intestines were examined for parasites. Organs for endoparasite examination were removed from the body cavity. The proventriculus and intestines were separated from other organs and were cut open to remove any parasites or food particles using a stir-rinse-repeat cycle, in which they were agitated in glass jars filled with tap water, any supernatant poured off, and the cycle repeated until a majority of the food particles were removed. The remaining contents were examined for parasites. All organs were pressed between two glass plates for examination under a stereomicroscope. Parasites were quantified and the location in which they were observed was recorded.

Non-nematode parasites were stained with an acetocarmine/70% ethanol solution, dehydrated through a 70%-95%-100%-100% ethanol series, cleared in clove oil and mounted in Permount (Fischer Scientific). Nematodes were placed in an 70% ethanol/30% glycerol solution for a minimum of two weeks to allow the ethanol to evaporate and then mounted in glycerine (Pritchard and Kruse 1982, McLaughlin 2001). Dichotomous keys and descriptions of new parasites were used to identify parasites to the lowest possible taxonomic level. Dichotomous keys used included McDonald (1981), Schell (1985), McDonald (1988), Amin (1998), Gibson et al. (2002), Jones et al. (2005), Anderson et al. (2009), and Gibbons (2010).

Results

Parasites were found in 73 of the 82 bird host specimens examined. The majority of parasites were collected from the intestines (71 out of 82 birds), followed in decreasing order by the proventriculus (38 birds), esophagus (14 birds), and trachea (1 bird). There were no endoparasites found in any examined bird species from the kidneys or liver. New host records and new geographic range extensions for parasite species are listed in Tables 2a-c.

Great Egrets had the greatest number of new host records (eight), followed by the Green Herons (six). New host records for the Great Egret include: *Plagiorhynchus* sp., Lühe, 1911, *Hexaglandula corynosoma*, Travassos, 1915, *Ibirhynchus dimorpha*, Schmidt, 1973, *Polymorphus*

Table 2a. New host records (*) for acanthocephalans found in wading birds collected from southeastern Florida. Eighty-two individual birds were examined that represented six species of wading birds.

Parasite	# of birds infected	Bird host species	Location in host	Geographic location
Plagiorhynchus sp. Lühe, 1911	1	Great Egret*	intestines	Fort Lauderdale
Hexaglandula corynosoma Travassos, 1915	1	Great Egret*	intestines	Fort Lauderdale
		Great Egret*	intestines	Tavernier
Ibirhynchus dimorpha Schmidt, 1973	6	Green Heron*	intestines	Tavernier
		Black-crowned Night-Heron*	intestines	Tavernier
		Great Egret*	intestines	Tavernier
Polymorphus obtusus Van Cleave, 1918	5	Yellow-crowned Night-Heron*	intestines	Fort Lauderdale
		Black-crowned Night-Heron*	intestines	Tavernier
Southwellina hispida Van Cleave, 1925	1	Great Egret*	intestines	Tavernier

Table 2b. New host records (*) for endoparasitic nematodes found in wading birds collected from southeastern Florida. Eighty-two individual birds were examined that represented six species of wading birds.

Parasite	# of birds infected	Bird host species	Location in host	Geographic location
Chabaudacuaria multispinosa Pérez Vigueras, 1938	1	Black-crowned Night-Heron*	esophagus	Tavernier
Paracuaria adunca Creplin, 1846	3	Yellow-crowned Night-Heron*	proventriculus	Fort Lauderdale
		Black-crowned Night-Heron*	proventriculus	Tavernier
Contracaecum multipapillatum Drasche, 1882	1	Green Heron*	proventriculus	Tavernier
Tetrameres ardamericanus Boyd, 1966	5	Great Egret*	intestines, proventriculus	Fort Lauderdale, Miami, Tavernier

Table 2c. New host records (*) and new geographic range extensions (+) for endoparasitic trematodes found in wading birds collected from southeastern Florida. Eighty-two individual birds were examined that represented six species of wading birds.

Parasite	# of birds infected	Bird host species	Location in host	Geographic location
Ribeiroia sp. Travassos, 1939	1	White Ibis*	intestines	Fort Lauderdale
Stephanoprora denticulata Rudolphi, 1802	1	Green Heron*	intestines	Tavernier
Cathaemasia nycticoracis Olsen 1940	1	Green Heron*+	intestines	Tavernier
Ascocotyle diminuta Stunkard et Haviland, 1924	15	Great Blue Heron*	intestines	Fort Lauderdale, Tavernier, Key West
		Green Heron*	intestines	Tavernier
Ascocotyle gemina Font, Heard et Overstreet, 1984	1	Green Heron*	intestines	Tavernier
Apatemon sp. Szidat, 1928	4	Great Blue Heron*	intestines	Fort Lauderdale
		Great Egret*	intestines	Fort Lauderdale, Miami
Parastrigea cincta Brandes, 1888; Szidat, 1928	6	White Ibis+	intestines	Fort Lauderdale, Tavernier
Parastrigea mexicanus Coil, 1957	5	Great Egret*+	intestines	Fort Lauderdale
		Great Blue Heron*+	intestines	Fort Lauderdale
		White Ibis*+	intestines	Fort Lauderdale
Pseudoapatemon sp.	2	Great Blue Heron*+	intestines	Fort Lauderdale, Miami
Strigea pseudibis Odening, 1962	6	Great Egret+	intestines	Fort Lauderdale, Miami, Tavernier
		White Ibis*+	intestines	Miami

obtusus, Van Cleave, 1918, *Southwellina hispida*, Van Cleave, 1925, *Tetrameres ardamericanus*, Boyd, 1966, *Apatemon* sp., Szidat, 1928, and *Parastrigea mexicanus*, Coil, 1957. New host records for the Green Heron are: *Ibirhynchis dimorpha*, Schmidt, 1973, *Contracaecum multipapillatum*, Drasche, 1882, *Stephanoprora denticulata*, Rudolphi, 1802, *Cathaemasia nycticoracis*, Olsen, 1940, *Ascocotyle diminuta*, Stunkard et Haviland, 1924, and *Ascocotyle gemina*, Font, Heard et Overstreet, 1984.

The White Ibis had the highest number of new geographic range extensions (three). In the White Ibis, *Parastrigea cincta*, Brandes, 1888, Szidat, 1928, has been previously reported in Mexico, and *Parastrigea mexicanus*, Coil, 1957, has been previously described in Cuba and Texas (Dubois and Macko 1972, Hinojos and Canaris 1988, Sepúlveda et al. 1999, Ortega-Olivares et al. 2011).

We also identified strigeids from White Ibis and Great Egrets that morphologically most closely resembled *Strigea pseudibis*, Odening, 1962; this report should probably be taken with some caution, as *S. pseudibis* has previously been described only from ibises and egrets captured in Asia and housed in a German zoo (Odening 1962).

Manuscript specimens are being submitted to the parasite collection at the National Museum of Natural History (Washington, D.C.)

DISCUSSION

The current study updates the inventory of helminth fauna for this complex of wading bird species; the previous comprehensive examination of helminth parasites of wading birds in Florida was conducted in the review of all bird species in the state by Forrester and Spalding (2003). The sample sizes provided in comprehensive examinations, such as the review directed by Forrester and Spalding (2003), should be taken under advisement as some of the studies did not provide a sample size or have a minimal sample size.

Only trematode parasites were found to have range extensions within this species complex; this may be due to an array of reasons. As trematodes are difficult to identify, it is likely that prior endoparasite studies missed the presence of these parasites. It is also plausible that the geographic ranges of intermediate host species, such as gastropods, are also shifting; but this data is rarely available. Additionally, the impacts of climate change will have an effect on the distribution of parasite species (Dobson and Carper 1992, Marcogliese 2001, Marcogliese 2008). Although it is difficult to predict how a particular species of parasite will respond to changes in climate; typically longer growing seasons and higher temperatures will lend to more generations

of parasites and more occurrences of disease resulting from increased transmission rates (Marcogliese 2001, Hudson et al. 2006, Marcogliese 2008).

The large number of new host records and geographic range extensions discovered in this study may be due to the diverse range of habitats in southeastern Florida. Schomer and Drew (1982) provided an ecological description of the lower Everglades, Florida Bay, and the Florida Keys and used a conceptual model identifying four major ecological zones; 1) terrestrial and freshwater wetlands, 2) estuarine and saltwater wetlands, 3) Florida Bay and mangrove islands and 4) the Florida Keys. The wading birds examined in this study are present in all of these ecological zones. This allows for a diverse parasite community to exist within this wading bird species complex.

In addition to habitat diversity, migratory behavior may have had an impact on the large number of new host records and geographic range extensions. All wading bird species in this study are known to have both migratory and resident populations. Due to southeastern Florida's location on the Atlantic Flyway, these migratory birds are exposed to various environments. Figuerola and Green (2000) investigated the idea that migratory species are exposed to a more diverse parasite community by analyzing the diversity and prevalence of infections by haematozoan parasites in waterfowl in relation to host migration patterns. They determined that migratory birds are more susceptible or are exposed to a more diverse parasite faunal assemblage. The two concepts of one, different ecological zones found in southeast Florida, and two, the effect of migratory behavior on parasite diversity, may both have impacted the sizeable number of new host records and geographic range extensions determined by this study.

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Supplemental Material

A full literature review of the endoparasites found within Great Egrets, Great Blue Herons, Green Herons, Yellow-crowned Night-Herons, Black-crowned Night-Herons, and White Ibis has been permanently archived at <https://nsuworks.nova.edu/occ_fac-datasets/8/>.

Literature Cited

Amin, O. M. 1998. Marine Flora and Fauna of the Eastern United States: Acanthocephala. NOAA Technical Reports NMFS, U. S. Department of Commerce, Seattle, Washington.

Anderson, R. C., A. G. Chabaud, and S. Willmott (Eds.). 2009. Keys to the Nematode Parasites of Vertebrates: Archival Volume. CABI, Wallingford, U.K.

Brooke, M., and T. Birkhead (Eds.). 1991. The Cambridge Encyclopedia of Ornithology. Cambridge University Press, Cambridge, U.K.

Dobson, A., and R. Carper. 1992. Global warming and potential changes in host-parasite and disease-vector relationships. Pages 201-217 *in* Global Warming and Biological Diversity (R. L. Peters and T. E. Lovejoy, Eds.) Yale University Press, New Haven, Connecticut.

Dubois, G., and J. K. Macko. 1972. Contribution à l'étude des *Strigeata* La Rue, 1926 (*Trematoda: Strigeida)* de Cuba. Annales de Parasitologie 47:51-75.

Figuerola, J., and A. J. Green. 2000. Haematozoan parasites and migratory behavior in waterfowl. Evolutionary Ecology 14:143-153.

Forrester, D. J., and M. G. Spalding. 2003. Parasites and Diseases of Wild Birds in Florida. University Press of Florida, Gainesville.

Gibbons, L. M. 2010. Keys to the Nematode Parasites of Vertebrates: Supplementary Volume. CABI, Wallingford, U.K.

Gibson, D. I., A. Jones, and R. A. Bray (Eds.). 2002. Keys to the Trematoda, Vol 1. CABI, Wallingford, U.K.

Hinojos, J. G., and A. G. Canaris. 1988. Metazoan parasites of *Himantopus mexicanus* Muller (Aves) from Southwestern Texas, with a checklist of helminth parasites from North America. Journal of Parasitology 74:326-331.

Hudson, P. J., I. M. Cattadori, B. Boag, and A. P. Dobson. 2006. Climate disruption and parasite-host dynamics: Patterns and processes associated with warming and the frequency of extreme climatic events. Journal of Helminthology 80:175-182.

Jones, A., R. A. Bray, and D. I. Gibson (Eds.). 2005. Keys to the Trematoda, Vol 2. CABI, Wallingford, U.K.

Lovette, I. J., and J. W. Fitzpatrick (Eds.). 2016. Cornell Lab of Ornithology's Handbook of Bird Biology, 3rd ed. John Wiley Sons, Ltd., West Sussex, U.K.

Marcogliese, D. J. 2001. Implications of climate change for parasitism of animals in the aquatic environment. Canadian Journal of Zoology 79:1331-1352.

Marcogliese, D. J. 2008. The impact of climate change on the parasites and infectious diseases of aquatic animals. Scientific and Technical Review of the Office International des Epizooties 27:467-484.

McDonald, M. E. 1981. Keys to Trematodes Reported in Waterfowl. Fish and Wildlife Service, U. S. Department of the Interior, Washington, D. C.

McDonald, M. E. 1988. Keys to Acanthocephala Reported in Waterfowl. Fish and Wildlife Service, U.S. Department of the Interior, Washington, D. C.

McLaughlin, J. D. 2001. Ecological monitoring and assessment network (EMAN) protocols for measuring biodiversity: Parasites of birds. Concordia University, Montreal, Canada and Parasitology Module Steering Committee Parasitology Section, Canada.

Odening, K. 1962. Trematodes from Indian birds of the Berlin Zoo. Zeitschrift für Parasitenkunde 21:381-426.

Ortega-Olivares, M. P., D. I. Hernández-Mena, G. Pérez-Ponce de León, and M. García-Varela. 2011. Helminths of the white ibis, *Eudocimus albus* (Aves: Threskiornithidae) in Mexico. Zootaxa 3088:15-26.

Pritchard, M. H., and G. O. W. Kruse. 1982. The Collection and Preservation of Animal Parasites. Technical Bulletin No. 1. University of Nebraska Press, Lincoln, Nebraska.

SCHELL, S. C. 1985. Handbook of Trematodes of North America North of Mexico. University Press of Idaho, Moscow.

SCHOMER, N. S., AND R. D. DREW. 1982. An Ecological Characterization of the Lower Everglades, Florida Bay, and the Florida Keys. U. S. Fish and Wildlife Service. Office of Biological Services, Washington, D. C.

SCHREIBER, E. A., AND J. BURGER (EDS.). 2001. Biology of Marine Birds. CRC Press, Boca Raton, Florida.

SEPÚLVEDA, M. S., M. G. SPALDING, J. M. KINSELLA, AND D. J. FORRESTER. 1999. Parasites of the great egret (*Ardea albus*) in Florida and a review of the helminthes reported for the species. Journal of the Helminthological Society of Washington 66:7-13.

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REVIEW

The Birds of Pinellas County, by Ron Smith. 2016. St. Petersburg Audubon Society, St. Petersburg, Florida. ISBN 978-0-692-81085-9. $25 softcover. vii + 192 pages.

Despite the ornithological wealth found in Florida, surprisingly few summaries of the birdlife of the state's counties or regions have been published. I suspect that the primary reason for this dearth of published data is that few birders have been willing to spend hundreds of hours compiling the data, separating the relevant information from the mundane, writing the manuscript, and then finding a publisher willing to fund a book that is unlikely to sell more than a few hundred copies—or self-publishing the book. Fortunately for us, Ron Smith of St. Petersburg accepted the challenge of summarizing more than a century of bird data from Florida's most densely-populated county, and—perhaps contradictorily—one of its most ornithologically diverse. With *The Birds of Pinellas County*, Smith has added to the sparse list of Florida regional bird summaries published over the past four decades, most notably *The Birds of Brevard County* (Cruickshank 1980, Florida Press), *The Birds of Escambia, Santa Rosa, and Okaloosa Counties, Florida*, third edition (Duncan and Duncan 2018, self-published), and *A Birdwatcher's Guide to Alachua County, Florida*, second edition (Rowan and Manetz 2006, self-published). Smith's book is an extensive revision of his earlier *A Birder's Guide to Pinellas County (Florida)*, published in 2011 and not reviewed in this journal.

The information in *The Birds of Pinellas County* is thorough, up-to-date (through 2016), and well presented. Commendably, Smith follows the format of other Florida bird books published recently in distinguishing records (observations that are verifiable from specimen or photographic evidence) from reports (sightings that are not supported by such evidence). The taxonomy rigorously follows the American Ornithological Society *Checklist of North and Middle American Birds* through the 56th supplement published in July 2016. The text is interspersed with 27 color photographs of birds taken in Pinellas County. Although these tend to represent rarities that only advanced birders have seen, most of the photographs are of high quality and add greatly to the book's visual appeal; they also allow several rarities to be documented in print.

The Introduction includes the impressive statistic that 394 bird species have been "verified" in Pinellas County. I'll comment more about this definition later in the review. Seven species were added to the verified list between 2011 and 2016, among these Red-billed Tropicbird (*Phaethon aethereus*), Say's Phoebe (*Sayornis saya*), Townsend's Solitaire (*Myadestes townsendi*), and Horned Lark (*Eremophila alpestris*). Hudsonian Godwit (*Limosa limosa*) was verified in 2018, and Sabine's Gull (*Xema sabini*) and Black-headed Gull (*Chroicocephalus ridibundus*) have been verified thus far in 2019 (R. Smith in litt.). Breeding species of Pinellas County total 110 native and established exotic species.

Smith next details the extensive ornithological, conservation, and birding history of the county in the chapter entitled Pinellas Birding History. Because of the large wading bird rookeries that were plundered for and decimated by the plume trade, Pinellas County was at the forefront of the bird-conservation movement. Smith chronicles the visits by ornithologists such as W. E. D. Scott, Robert Holt, Clifford Pangburn, and William Fargo, among others, whose pioneering studies from the 1880s to the 1930s helped shape the ornithological history of the region. Smith also details the contributions of Katherine Bell Tippits, the founder and first president of the St. Petersburg Audubon Society, who was instrumental in establishing 11 bird sanctuaries in the county. The St. Petersburg

Christmas Bird Count has been conducted every winter since 1928.

The next two chapters, The Pinellas Birding Year and Pinellas County Birding Sites, are grouped together here. The first chapter details predictable ornithological events occurring in the county during each month (e.g., "During January, wintering ducks can be found on most bodies of water, a few hawks and falcons are stationed around the county watching for unsuspecting prey, and Bald Eagles and Great Horned Owls are either on their nests or about to be." And, "There is no month like October that draws as many rare birds."). The second chapter describes 24 birding sites in Pinellas County, the ideal season(s) to visit, and a list of several species to look for. Some of the sites, such as Fort De Soto Park, Honeymoon Island State Park, and Dunedin Hammock Park, are significant sites that have been known for decades, while others, such as "28th Street Wetlands," Eagle Lake Park, and Kapok Park, are lesser-known sites that have been discovered recently.

Chapter 4, About the Annotated Checklist, explains the definitions, abbreviations, and symbols found in the species accounts. Eight abundance/frequency categories are used: Common ("expected"), Uncommon ("present, but in low numbers"), Irregular ("migrant or summering/wintering species present in the season[s] indicated, but numbers vary from year to year"), Occasional ("infrequently present"), Rare ("two known reports/records"), Casual ("one or two known reports/records of a species that may again be expected to occur"), Accidental ("one or two reports/records of a species not expected to occur again"), and Extirpated ("driven out by human activity and no longer found"). Following this is Chapter 5, The Annotated Checklist. By my count, 415 species are included, with 394 of these "verified" and 21 others "unverified." An additional 34 species, all "non-countable" exotics, are placed in a separate list (here, termed an appendix) at the end. In his Introduction, Smith follows standard ornithological practice in defining a "verified" species as one that has been photographed, salvaged, or collected in the county. But Smith also considers a species to be "verified" if a "detailed written account" has been accepted by members of the Florida Ornithological Society Records Committee.

Species accounts follow the format first published in *Florida Bird Species: An Annotated List* (Robertson and Woolfenden 1992, Florida Ornithological Society): after the English and scientific names of a species there follows a brief sentence or two giving its status and seasonal distribution in the county. Seven examples follow: Black-bellied Whistling-Duck (*Dendrocygna autumnalis*) is an "Irregular spring through fall visitor/ resident (Apr-Sep);" Long-billed Dowitcher (*Limnodramus scolopaceus*) is an "Occasional migrant and winter visitor (Oct-May);" Flammulated Owl (*Otus flammeolus*) is an "Accidental visitor;" Carolina Wren (*Thryothorus ludovicianus*) is a "Common permanent resident ... throughout the county, more so at the north end;" American Redstart (*Setophaga ruticilla*) is a "Common migrant (Mar-May, Aug-Nov)" that is "Occasional in summer (Jun-Jul) and winter (Dec-Jan);" Northern Cardinal is a "Common permanent resident. Every neighborhood has a pair (or two)...;" and Brewer's Blackbird (*Euphagus cyanocephalus*) is an "Occasional fall through winter visitor (Oct-Feb)." Most accounts include specific dates, locations, and observers of from a few to many reports to provide additional information beyond the introductory sentence(s). Accounts average 8-12 lines of text, varying from one line for Black Noddy (*Anous minutus*) and Boat-tailed Grackle (*Quiscalus major*) to 28 lines for Least Tern (*Sternula antillarum*).

Of the 415 species in the main list, three represent non-established exotics that should have been included in the appendix: a wing-clipped Trumpeter Swan (*Cygnus buccinator*)—unquestionably a local escapee or release—that Smith terms an "accidental visitor;" a few Egyptian Geese (*Alopochen aegyptiaca*) that were seen last in 1985 and that were not related to the population now established in the southeastern peninsula (Pranty and Ponzo 2014, Status and distribution of Egyptian Geese [*Alopochen aegyptiaca*] in southeastern Florida. *Florida Field Naturalist* 42:91-107); and the population of African Collared-Doves (*Streptopelia "risoria"*) that has been extirpated

for 30 years. (Budgerigar, *Melopsittacus undulatus*, extirpated for 20 years, is relegated to the appendix despite having been much more numerous and widespread than was the dove). Three natural vagrants seem to be erroneously considered "verified;" Western Grebe (*Aechmophorus occidentalis*) was accepted even though the verifiable evidence (a photographic slide) is long lost, thus preventing Clark's Grebe (*A. clarkii*) from being ruled out; Little Gull (*Hydrocoloeus minutus*) was accepted despite seemingly not meeting any of Smith's "verified" criteria; and California Gull (*Larus californicus*) was accepted even though the primary observer (Lyn Atherton) later "recanted" the sightings, believing them to represent aberrant Herring Gulls (*L. argentatus*). Finally, 20 species not verified in the county, such as American Black Duck (*Anas rubripes*), Red-throated Loon (*Gavia stellata*), Bewick's Wren (*Thryothorus bewickii*), Bachman's Warbler (*Vermivora bachmanii*), and Western Meadowlark (*Sturnella neglecta*), are included in the Annotated Checklist solely on the basis of reports, some of which Smith appears to doubt (and rightly so). These species belong in a "hypothetical" list separate from the main list.

I noted several errors in the book, the most important being, 1) it was Arthur Howell who authored *Florida Bird Life* (1932); 2) the local, resident subspecies of Marsh Wren (*Cistothorus palustris*) is *marianae*, named after W. E. D. Scott's wife, Marian; 3) Clifford Pangburn's report of two Zenaida Doves at Pass-A-Grille, in 1918 (not 1989) was later retracted (Pangburn 1937, Auk 54:574), a note that Smith apparently overlooked; 4) the status of Red-tailed Hawk (*Buteo jamaicensis*) should read "an uncommon permanent resident"; 5) the date of W. E. D. Scott's report of Hudsonian Godwit was in 1886 (R. Smith in litt.); and 6) there is no record of Northern Goshawk (*Accipiter gentilis*) in Florida other than the Pinellas County skeleton.

If Ron Smith again revises his book, then I recommend that he restrict his Annotated Checklist to verified species that can be documented via *extant* specimens or photographs, and that all remaining species be considered "hypothetical" and be relegated to one or more appendices. I also suggest that he use fewer and more-standard abundance/frequency categories; I suspect that many species currently labeled as uncommon or occasional would be better considered as rare in the county. Additionally, information on "non-countable" exotic species needs to be made more consistent.

Ron Smith and the St. Petersburg Audubon Society are to be commended for publishing this excellent book. I highly recommend *The Birds of Pinellas County* to anybody interested in the avifauna of Florida, as well as birders who intend to visit Pinellas County or neighboring counties. This book belongs in college and university libraries as an essential ornithological reference of the birds of the Tampa Bay region.

I thank Ron Smith for providing information about his book, and Dave Goodwin for facilitating this review.

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FIELD OBSERVATIONS

Winter Report: December 2018-February 2019.—This report consists of significant bird observations compiled by the Field Observations Committee (FOC). Electronic submissions to the FOC should be in the following format: species, number of individuals, age and sex of the bird(s), color morph if applicable, location (including county), date, observer(s), and significance. Seasons are winter (December-February), spring (March-May), summer (June-July), and fall (August-November). Submit observations to regional compilers within two weeks after the close of each season, or to the state compiler within one month. Addresses of the compilers follow this report.

Sight-only observations are considered "reports" while only those observations supported by verifiable evidence (photographs, video or audio recordings, or specimens) are called "records." Species for which documentation is required by the FOC and by the FOS Records Committee (FOSRC; <fosbirds.org/official-florida-state-bird-list>) are marked here with an asterisk (*). A county designation (in italics) accompanies the first-time listing of each site in this report. Abbreviations in this report are: AFB = Air Force Base, AFR = Air Force Range, CA = Conservation Area, EOS = end of season, m. obs. = many observers, NERR = National Estuarine Research Reserve, NF = National Forest, NP = National Park, NSRA = North Shore Restoration Area, NWR = National Wildlife Refuge, SF = State Forest, SP = State Park, STA = Stormwater Treatment Area, STF = sewage treatment facility, WMA=Wildlife Management Area, and N, S, E, W etc., for compass directions. Bold-faced entries denote birds newly reported or verified in Florida, or record numbers. Photographs or video- or audio-recordings archived by the FOC are identified by a plus (+).

Summary of the Winter Season

State review species in this report include American Black Duck, Common Merganser, Red-necked Grebe, **Dark-billed Cuckoo**, Vaux's Swift, Broad-tailed Hummingbird, Allen's Hummingbird, Black-legged Kittiwake, Black-headed Gull, **Black-tailed Gull**, Pacific Loon, Yellow-bellied Flycatcher, La Sagra's Flycatcher, Thick-billed Vireo, Sprague's Pipit, Mourning Warbler, Western Spindalis, Bananaquit, Yellow-faced Grassquit, and Black-headed Grosbeak.

Species Accounts

Black-bellied Whistling-Duck: 6 at Eastman / Taminco Sanctuary (*Santa Rosa*) 1 Dec-25 Feb (L. Kelly, B. Furlow, L. Goodman); 1200 at Spring Lake Subdivision (*Highlands*) 9 Feb (M. McMillian).

Fulvous Whistling-Duck: Up to 70 at T. M. Goodwin WMA (*Brevard*) 13 Dec-12 Feb (J. Eager, P. Mansfield, m. obs.); 5 at Fellsmere WMA (*Indian River*) 19 Dec (D. Richard); 22 at Marl Bed Flats (*Seminole*) 29 Dec (+S. Collins); 1 at Ritch Grissom Memorial Wetlands (*Brevard*) 8-10 Jan (A. Whitlock).

Snow Goose: 2 at Walsingham Park (*Pinellas*) 4 Dec (+D. Lowe); 1 white morph at Gander Pond (*Duval*) 29 Dec-7 Jan (K. Dailey, M. Dailey); 4 at New Haven Avenue (*Brevard*) 26 Jan (H. Nicolay); 2 at Gulf Breeze (*Santa Rosa*) 24-28 Feb (R. Ludlow, C. Fox).

Canada Goose: 1 at Spring Lake Hills (*Seminole*) 23 Dec (P. Hueber); 1 at Town Center Mall pond (*Seminole*) 25 Jan (H. Donnelly).

Egyptian Goose: 1 at Gainesville (*Alachua*) throughout the season (N. McDuffy et al.); 1 at Lake Eola (*Orange*) 27 Feb (L. Lilja).

Muscovy Duck: 1 at Imeson Center (*Duval*) 30 Dec (+K. Dailey); 3 at Sampey Road (*Lake*) 5 Jan (B. Streeper).

Eurasian Wigeon: 1 at Black Point Wildlife Drive (*Brevard*) 22-26 Jan (K. Burke).

*American Black Duck: 9 at St. Marks NWR (*Wakulla*) 12 Dec-6 Feb (D. Morrow); 2 at Catfish Avenue (*Volusia*) 29 Dec (T. Lee).

Mallard: 1 at Lake Apopka North Shore (*Lake*) 21 Feb (S. Patterson).

Mottled Duck: 5 at Lake Apopka Lock and Dam (*Lake*) 22-23 Dec (F. Fogarty); 6 at Flat Lake (*Lake*) 5 Jan (J. Thomton).

Cinnamon Teal: 1 at Black Point Wildlife Drive 21 Jan-17 Feb (H. Whelan).

Northern Pintail: 1 female at Lake Maggiore (*Pinellas*) 12-19 Dec (+R. Smith); 1 male at Lake Seminole (*Pinellas*) 15 Dec (+T. Young); 1 male at Pinellas Bayway 19-29 Jan (+L. Margeson).

Canvasback: 1 at Lake Apopka Wildlife Drive (*Orange*) 1 Dec-15 Feb (S. Murphy); 1 at Westside Industrial Park (*Duval*) 23 Dec (+C. Wainwright); 1 at Gainesville to 9 Jan (D. Segal, C. Burney et al.); 41 at Crowder Landing (*Leon*) 5 Feb (J. O'Connell).

Greater Scaup: 1 male at Lake Apopka Wildlife Drive 8-22 Dec (J. Mileyka).

Lesser Scaup: 786,300 at Cape Canaveral Hospital (*Brevard*) 15 Dec (J. Eager.)

Common Eider: 1 at Ponce Inlet (*Volusia*) 3 Dec-27 Feb (+W. Milstein); 1 at Jetty Park (*Brevard*) 4 Dec-27 Feb (C. Flint); 1 at Black Hammock Island (*Duval*) 27-30 Dec (A. Baggett); 1 female at Seminole Rest Area (*Volusia*) 1 Jan (C. Brelsford); 1 at Riverbreeze Park (*Volusia*) 2 Jan (J. Kendall); 1 female, 1 immature male at Bennett Causeway / Banana River Bridge (*Brevard*) 10 Jan-23 Feb (S. Jones); 1 at Vilano Inlet (*St. Johns*) 23-25 Feb (D. Alvarez).

Surf Scoter: Up to 13 at Mosquito Lagoon (*Volusia*) 1-24 Dec (M. Brothers); up to 44 offshore Apollo Beach (*Volusia*) 1-30 Dec, 10, 22 Feb (D. LaGrange); up to 20 at Riverside Pavilion Park (*Volusia*) 1 Dec-12 Feb (K. Matera); up to 13 at North Beach Street (*Volusia*) 7-13 Dec (M. Brothers); 2 at Indian Rocks Beach (*Pinellas*) 7 Dec (D. Goodwin); 1 at Shiloh Marsh Road (*Volusia*) 4-6 Jan (M. Brothers).

White-winged Scoter: 1 female at Riverside Pavilion Park (*Volusia*) 1 Dec-12 Feb (K. Matera); 3 at Alligator Point (*Franklin*) 1 Dec-EOS (J. Murphy); 1 at Lake City Treatment Wetland (*Columbia*) 2 Dec (E. Schwartz, A. Lamoreaux et al.); 3 at Port Orange Causeway Park 3-27 Dec (H. Robinson); 1 at North Beach Street 7 Dec (M. Brothers); 1 at Jetty Park 15-26 Dec (M. Harris); 8 at Madeira Beach 15 Dec (+B. Forys); 1 at Fort Island Gulf Beach (*Citrus*) 29 Dec (J. Hoch, P. Bazany).

Black Scoter: 1 at King's Bay (*Citrus*) through 29 Dec (P. Bazany); 40 at John's Pass (*Pinellas*) 15 Dec (B. Ahern et al.); 30 at Madeira Beach (*Pinellas*) 13 Feb (+ J. Gibbons, I. Gibbons, R. Smith).

Long-tailed Duck: 1 at South Atlantic Avenue (*Volusia*) 8 Dec (M. Brothers); up to 2 at Shiloh Marsh Road 10 Dec-2 Feb (D. LaGrange); 1 female at West Gator Creek (*Brevard*) 25-26 Feb (A. Whitlock).

Bufflehead: Up to 12 at Lake Apopka Wildlife Drive 1 Dec-8 Feb (S. Mitcham); 1 at Sugarpine Road (*Orange*) 3 Dec (S. Gasser); 1 at Field of Fame (*Orange*) 22 Dec-2 Jan (K. Rigling); 16 at Overstreet Road (*Orange*) 1-23 Jan (B. Asteriades); 1 female at Currency Circle Pond (*Seminole*) 2-29 Jan (S. Collins); 2 at 6th Street (*Orange*) 8-14 Feb (S. Mitcham).

Common Goldeneye: 1 female at Chapel Hill Cemetery (*Orange*) 7-20 Jan (L. Mathis).

*Common Merganser: 1 at Jetty Park (*Brevard*) 15 Dec-23 Jan (+M. Harris).

Red-breasted Merganser: 1 at Lake Apopka Wildlife Drive 1 Dec (M. Richardson); 1 at Lake Jackson (*Highlands*) 23 Feb (+T. Sanders).

Ruddy Duck: 8 at Silver Lake (*Hillsborough*) 5 Jan (R. Webb).

American Flamingo: 1 at St. Marks NWR 1 Dec-EOS (D. Morrow).

Horned Grebe: 1 at Lake Apopka Wildlife Drive 25 Dec-9 Jan (T. Besancon); 1 at Lake Baldwin Park 2-6 Feb (J. Thomton).

*Red-necked Grebe: 1 at Huguenot Memorial Park (*Duval*) 1-9 Jan (m. obs.), details to FOSRC.

Eared Grebe: 1 at E Gulf Breeze 15 Feb (L. Kelly, M. Brower).

White-crowned Pigeon: 1 at Hwy A1A, Vero Beach (*Indian River*) 2 Feb (+J. Grudens).

Yellow-billed Cuckoo: 1 at Emeralda Marsh CA (*Lake*) 8 Dec (G. DelPizzo); 1 at Lake Apopka Wildlife Drive 16 Dec (+P. Hueber).

***Dark-billed Cuckoo**: 1 at West Delray Regional Park (*Palm Beach*) 6-10 Feb (K. Matera, M. Gomes, +M. Avello, +J. Kietzmann), details to FOSRC.

Smooth-billed Ani: 1 at Pine Glades Natural Area (*Palm Beach*) 1-4 Dec (m. obs.); 1 at Little Talbot Island SP (*Duval*) 3 Dec-EOS (S. Oosterveen, +K. Dailey) provided the first NE FL report since 1966; 1 at Fort Zachary Taylor Historic SP (*Monroe*) 5 Dec-8 Jan (C. Goodrich); 1 at Guana River WMA (*St. Johns*) 16-17 Dec (D. Meehan, D. Reed); 1 at Plantation Preserve (*Broward*) 17 Dec-5 Feb (m. obs.); 1 at Lake Apopka North Shore 30 Dec-1 Feb (+K. Hamblett).

Groove-billed Ani: 1 at Winding Waters Natural Area (*Palm Beach*) 1 Dec-EOS (m. obs.).

Chuck-will's-widow: 1 at Weeki Wachee (*Hernando*) 19 Dec (D. Goodwin); 2 at Joshua Creek Trailhead (*Orange*) 16 Feb (S. Simmons); 1 at Gainesville 27 Feb (A. Barkdoll).

*Vaux's Swift: Up to 6 at Gainesville throughout the period (A. Lamoreaux et al.).

Black-chinned Hummingbird: 1 at a Bellwood yard (*Brevard*) 3-21 Feb (+M. Harris).

*Broad-tailed Hummingbird: 1 at Tallahassee (*Leon*) 14-15 Jan (J. O'Connell, F. Dietrich, E. Schunke).

Rufous Hummingbird: 1 at St. Marks NWR 16 Dec (D. Rogles); 1 at Bartow (*Polk*) 3 Jan (L. Spence).

*Allen's Hummingbird: 1 at E Niceville (*Okaloosa*) 27 Nov (S. Maxwell, T. Maxwell).

Black Rail: 1at Lake Apopka Wildlife Drive 8 Dec (L. Gray); 1 at Shiloh Marsh Road 12 Dec (M. Brothers).

Gray-headed Swamphen: 1 at Lake Apopka Wildlife Drive 1 Dec-24 Feb (S. Krah); 1 at Rich Grissom Memorial Wetlands at Viera 17 Feb (A. Wilmot).

Purple Gallinule: 1 at St. Marks NWR 12 Dec-EOS (D. Morrow); 1 at Guana River WMA (*St. Johns*) 14-24 Jan (+C. Elder).

Whooping Crane: 1 at Kanapaha Prairie (*Alachua*) throughout the period (*fide* R. Rowan, D. Munroe).

Black-necked Stilt: 4 at Lake Jessup (*Seminole*) 19 Dec (G. Williams); 1 at Lake Apopka Wildlife Drive 24 Dec, 12-22 Feb (M. Knudsen, m. obs.); 20 at Lake Apopka Loop Trail 18 Jan (J. Duprey); 2 at Orlando Wetlands Park (*Orange*) 11-27 Feb (R. Smith).

American Oystercatcher: 1,144 at Cedar Key (*Levy*) 4 Feb (D. Leary, P. Leary); 182 at Bumblebee Creek (*Dixie*) 5 Feb (D. Leary, P. Leary); 269 at Horseshoe Beach Jetty (*Dixie*) 5 Feb (D. Leary, P. Leary); 48 at Shired Creek (*Dixie*) 5 Feb (D. Leary, P. Leary).

Whimbrel: 1 at Bumblebee Creek 5 Feb (D. Leary, P. Leary).

Long-billed Curlew: 1 at Fred Howard Park (*Pinellas*) and nearby Honeymoon Island SP 24-31 Dec (+R. Vogel).

Ruddy Turnstone: 7 at Orlando Wetlands Park 4 Feb (+L. Katkin).

Purple Sandpiper: Up to 3 at Huguenot Memorial Park 9 Dec-EOS (+K. Dailey).

Semipalmated Sandpiper: 1 at Pumphouse (*Brevard*) 17-21 Jan (+J. Kendall); 1 at East Gator Creek 22 Jan (P. Mansfield); 1 at Peacocks Pocket (*Brevard*) 24 Feb (+D. LaGrange); 1 at West Gator Creek 25 Feb (A. Whitlock).

Short-billed Dowitcher: 2 at Lake Apopka Wildlife Drive 1 Dec-3 Feb (+P. Hueber).

American Woodcock: 3 at Lighthouse Road (*Wakulla*) 18 Jan-9 Feb (D. Morrow); 2 at Hal Scott Regional Preserve (*Orange*) 8 Feb (G. Williams).

SOLITARY SANDPIPER: 1 at Gainesville 2-8 Dec (J. Donsky); 1 at Hague (*Alachua*) 7-26 Jan (S. Wade, D. Segal et al.); 1 at West Regional WTF Wetlands (*Indian River*) 2 Feb (+A. Begazo); 1 at Orlando Wetlands Park 4 Feb (+L. Katkin).

PARASITIC JAEGER: 2 ca. 20 miles off Clearwater Beach (*Pinellas*) 26 Dec (+R. Smith, A. Smith); 1 at Fort De Soto Park (*Pinellas*) 14 Jan (+G. Lawrence).

*BLACK-LEGGED KITTIWAKE: 1 immature at Dry Tortugas NP (*Monroe*) 12 Dec (M. Kramer, E. Ardila).

*BLACK-HEADED GULL: 1 at Fred Howard Park 30 Jan (+F. Murphy, D. Ferguson).

FRANKLIN'S GULL: 1 at Frank Rendon Park (*Volusia*) 1 Dec (M. Awan); 1 at Botefuhr Avenue (*Volusia*) 6 Dec (M. Brothers).

*BLACK-TAILED GULL: 1 at 2727 S. Atlantic Avenue, Daytona Beach Shores (*Volusia*) 1 Feb (*+M. Brothers).

HERRING GULL: 1 at Willa Springs Shopping Center (*Seminole*) 1 Jan (S. Simmons).

ICELAND GULL: 1 (Kumlien's) at Frank Rendon Park 28 Jan (A. Lamoreaux); 1 (Thayer's) at Frank Rendon Park 31 Jan-18 Feb (M. Brothers).

LESSER BLACK-BACKED GULL: 2-5 at Walnut Hill (*Escambia*) 27 Jan-10 Feb (J. Callaway, B. Callaway, B. Duncan, L. Duncan).

GLAUCOUS GULL: 1 at Huguenot Memorial Park 5 Dec (+A. Tanner); 1 at Anastasia SP (*St. Johns*) 29 Dec (+A. Tanner); 1 at Anastasia SP 19 Feb (+S. Killeen); 1 at Apalachicola (*Franklin*) 26 Feb (B. Kinzie, J. Murphy).

GREAT BLACK-BACKED GULL: 1 at Apalachicola 28 Dec (B. Kinzie, +J. Murphy).

GULL-BILLED TERN: 1 at Orlando Wetlands Park 16 Dec-25 Feb (P. Marvin); 1 at Fred Howard Park 21 Dec (D. Gagne).

BLACK TERN: 1 at Pensacola Beach (*Escambia*) 30 Dec (L. Duncan, S. Duncan, W. Duncan, C. Zehnder).

COMMON TERN: 8 at Pensacola Beach 28 Dec (S. Duncan, B. Duncan, W. Duncan, C. Zehnder); 85 at Treasure Island Beach (*Pinellas*) 13 Feb (+R. Smith, J. Gibbons, I. Gibbons); 1 at Jetty Park 26-28 Feb (P. Mansfield).

ROYAL TERN: 1 at Orlando Wetlands Park 10 Dec-Jan 6 (K. Hawklee); 1 at Oakland Nature Preserve (*Orange*) 5 Jan (M. Rozmarynowycz); 1 at Lake Apopka Wildlife Drive 19 Jan (J. Leavens).

RED-THROATED LOON: 1 at Alligator Point (*Franklin*) 15 Dec (M. Brothers, J. Murphy); 1 at Shiloh Marsh Road 1-5 Jan (P. Hueber); 1 at Tom Renick Park (*Volusia*) 17 Jan, 27 Feb (H. Robinson).

*PACIFIC LOON: 1 at Gulf Breeze 27 Dec (B. Duncan, S. Duncan); 1 at Fort Pickens (*Escambia*) 20 Feb (B. Duncan, L. Duncan).

CORY'S SHEARWATER: 1 offshore Orchid Island Beachfront (*Indian River*) 27 Dec (J. Drucker).

SOOTY SHEARWATER: 1 at Fort De Soto Park 1 Jan (+N. Langwald).

GREAT SHEARWATER: 1 at Sebastian Inlet SP (*Brevard*) 12 Jan (+A. Whitlock).

WOOD STORK: 16 at Ascend Chemicals (*Escambia*) 4 Jan (C. Davis); 1 at W Pensacola (*Escambia*) 22-24 Jan (C. Tebay, M. McGahan).

MAGNIFICENT FRIGATEBIRD: 1 at Lighthouse Point Park (*Volusia*) 27 Dec (J. Dinsmore).

BROWN BOOBY: 1 offshore Frank Rendon Park (*Volusia*) 29 Jan (+T. Lee).

ANHINGA: 1 at Fort Walton Beach (*Okaloosa*) 17 Dec (L. Kelly, B. Furlow); 1 in Destin (*Okaloosa*) 17 Dec (B. Purdy); 1 at International Paper Wetlands (*Escambia*) 1-28 Feb (J. Callaway, B. Callaway).

AMERICAN WHITE PELICAN: 50 at Lorida (*Highlands*) 9 Feb (M. McMillian).

BROWN PELICAN: 1 at Lake Jessup 22 Feb (G. Williams).

LEAST BITTERN: 1-5 at International Paper Wetlands 5 Dec-28 Feb (J. Callaway, D. Stangeland).

GREAT BLUE HERON: 1 (white form) at Royal Palm Point (*Indian River*) 13 Dec (+D. Simpson).

Reddish Egret: 1 at Phipps Preserve (*Franklin*) 17 Dec (L. Swoboda, C. Lauzau, +J. Murphy); 1 at Navarre Beach (*Santa Rosa*) 17-26 Feb (D. Tilson, B. Schmid).

White-faced Ibis: 1 at Lake Apopka Wildlife Drive 22 Dec-24 Feb (+S. Simmons); 1 at Shiloh Marsh Road 6-14 Jan (D. Scitney); 1 at Sweetwater Wetlands Park (*Alachua*) 25 Jan-EOS (C. Poli et al.).

Roseate Spoonbill: 4 at Alligator Point 6 Dec (+J. Murphy).

Swallow-tailed Kite: 1 at Dunedin Hammock Park (*Pinellas*) 18 Feb (J. Zarolinski).

Snail Kite: 1 at Orlando Wetlands Park 7 Dec (+T. Ostrand); 1 at Flying Eagle Preserve (*Citrus*) 15 Dec (C. Kropke); up to 29 at Paynes Prairie Preserve SP throughout the period (J. Mays et al.); 2 at Lake Apopka Wildlife Drive 21 Dec-2 Feb (E. Horn); 1 at Masters Tract Stormwater Treatment (*St. Johns*) 22 Dec-6 Jan (+A. Tanner); 1 at Lake Jessup 28 Dec (D. Green); 1 at SR 50 boat ramp (*Orange*) 5 Jan (+G. Leavens); up to 5 (juveniles) at Stenstrom Bridge (*Volusia*) 6 Jan-27 Feb (+D. LaGrange); 1 at Ed Stone Park (*Volusia*) 3 Feb (F. English); 1 at Gemini Spring Park (*Volusia*) 21-28 Feb (R. Peterson); 1 at North Tract (*Seminole*) 22 Feb (G. Williams).

Mississippi Kite: 1 at Anhinga Trail, ENP (*Miami-Dade*) 19 Dec (+L. Manfredi); 1 at Buck Lake Road (*Leon*) 30 Jan (H. Hill, M. Hill).

Broad-winged Hawk: 1 at Sebastian Inlet SP 28 Dec-5 Feb (T. Towles); 1 adult at Jungle Trail (*Indian River*) 3-19 Jan (+W. Johnson); 1 adult/1 juvenile at Ocean Oaks West (*Indian River*) 21-29 Jan (+W. Johnson); 1 at Pensacola 14 Feb (J. Lloyd).

Short-tailed Hawk: Up to 3 at Gainesville 12-19 Jan (D. Mickelson, G. Gonzalez); 1 at Orlando Wetlands Park 5 Dec (+M. Keim); 1 at Seminole Ranch CA 23 Dec (F. Fogarty); 1 at Evinston (*Marion*) 25 Dec-5 Jan (S. Robinson); 1 at Walt Disney World area (*Orange*) 26 Dec, 28 Jan-28 Feb (M. Flemming); 1 at UPC Horse Farm (*Orange*) 1 Jan (S. Simmons); 1 at Homosassa Springs Wildlife SP 1 Jan (A. Kent); 1 at Blue Springs SP 10 Jan (M. Everett); 1 at Yate Road (*Orange*) 15 Jan (P. Mansfield); 1 at Eastern Florida State College (*Brevard*) 24 Jan (S. Reed); 1 at SR 50, St Johns River Bridge (*Orange*) 25 Jan (J. Cormorant); 1 at Lake Lotus (*Seminole*) 16 Feb (A. Boyle); 1 at Hal Scott Regional Preserve 21 Feb (G. Williams); 1 at Lake Panasoffkee (*Sumter*) 22 Feb (D. Richard); 1 at Yale Circle (*Lake*) 22 Feb (B. Matasick); 1 at Ferndale Preserve 22-23 Feb (G. Quigley); 1 at Hatbill Road (*Brevard*) 25 Feb (M. Brothers).

Swainson's Hawk: 1 at St. George Island SP (*Franklin*) 13 Dec (+C. Reiland-Smith); 1 at the Okaloosa County STF (*Okaloosa*) 17 Dec (A. Knothe).

Red-tailed Hawk: 1 (Krider's) at Lake Apopka Wildlife Drive 25 Dec-26 Feb (+D. LaGrange); 1 (Krider's) at Black Point Wildlife Drive 29 Jan-16 Feb (+T. Ward).

Burrowing Owl: Up to 3 at Orlando-Melbourne International Airport (*Brevard*) 29 Jan-25 Feb (A. Whitlock); 1 flew into a hardware store in South Pasadena and was taken to a rehab clinic 22 Feb (*fide* R. Smith).

Short-eared Owl: 1 at Shiloh Marsh Road 22 Jan (J. Kendall).

Hairy Woodpecker: 1 at St. Sebastian River Preserve SP 28 Dec, 10-15 Jan (D. Simpson); 1 at Micco Scrub Sanctuary (*Brevard*) 5-10 Jan, 14-25 Feb (J. Hoch); 1 at St. Sebastian River Preserve SP 13, 25 Jan (C. Ferro); 1 at Phillips Road (*Orange*) 19 Jan (P. Mansfield); 1 at Forest Road 63, Ocala NF (*Lake*) 29-31 Jan (A. Lamoreaux); 1 at Machete Trail (*Orange*) 18 Feb (R. Salisbury); 1 at Wheeler Stormwater Park (*Brevard*) 18 Feb (T. Ledford).

Merlin: 1 (Taiga) at West Hornbeam Drive, Longwood (*Seminole*) 28 Dec (S. Collins).

Nanday Parakeet: 1 at West Granada (*Volusia*) 16 Feb (S. Krah).

Eastern Wood-Pewee: 1 at Lake Apopka Wildlife Drive 2 Dec (L. Adams).

*Yellow-bellied Flycatcher: 1 at Spanish River Park (*Palm Beach*) 1-7 Dec (+D. Scolaro); 1 at Charles Deering Estate (*Miami-Dade*) 10 Dec (M. Kramer, E. Ardila).

Least Flycatcher: Up to 3 in *Alachua* throughout the season (S. Hofstetter, J. Mays, A. Zions et al.).

VERMILION FLYCATCHER: 1 at St. Marks NWR 1 Dec-EOS (J. O'Connell); 1 female at Lake Apopka Wildlife Drive 1 Dec-16 Feb (J. Mileyka).

ASH-THROATED FLYCATCHER: 1 at River Lakes CA (*Brevard*) 1 Dec-17 Jan (J. Eager); 1 at Okaloosa County STF 8 Dec-26 Jan (M. Swan, W. Sharkey, B. Duncan, L. Duncan); 1 at Shell Point (*Wakulla*) 15 Dec (K. Forehand-van der Linde, M. Forehand); 2 at Paynes Prairie Preserve SP 16 Dec-2 Jan (A. Zions et al.); 1 at Lake Apopka Wildlife Drive 16 Dec-22 Feb (S. Mitcham); 1 at Guana River WMA (*St. Johns*) 17 Dec (C. Elder); 1 at Little Talbot Island SP 29 Dec (+K. Dailey, M. Dailey); 1 at Black Hammock (*Seminole*) 29 Dec (P. Hueber); 1 at Hub Bailey Road (*St. Johns*) 14 Jan-EOS (+S. Weiss); 1 at Fort Pickens 8-24 Feb (J. Callaway, B. Callaway); 1 at Westside Industrial Park 23 Feb (+H. Kehrt); 1 at Dr. Robert Hayling Freedom Park (*St. Johns*) 25 Feb (J. Hill); 1 at Shell Pond Road (*Lake*) 27 Feb (G. Quigley).

GREAT CRESTED FLYCATCHER: 1 at Orlando Wetlands Park 14 Dec-25 Jan (K. Hamblett); 1 at Charles H. Bronson SF (*Seminole*) 23 Jan (D. Hartgrove); 1 at Boyd Hill Nature Preserve (*Pinellas*) 25 Jan (E. Plage); 1 at Demetree Park (*Orange*) 28 Jan (T. Rodriguez); 1 at Pine Meadows CA (*Lake*) 3 Feb (J. Groskopf); 1 at Indian River Lagoon Preserve (*Volusia*) 12 Feb (R. Fasse); 1 at Joshua Creek Trailhead (*Orange*) 16 Feb (S. Simmons).

BROWN-CRESTED FLYCATCHER: 1 at South Lake CA (*Brevard*) 30 Dec (+M. Harris).

*LA SAGRA'S FLYCATCHER: 1 at A. D. Barnes Park (*Miami-Dade*) 24 Feb-EOS (m. obs.).

WESTERN KINGBIRD: 1 at Gainesville 8-9 Dec (L. Gaudette, A. Lamoreaux); up to 3 east of Brooksville (*Hernando*) through 4 Mar (D. Grimes et al.); 1 at Maritime Hammock Preserve (*Brevard*) 15 Dec (P. Mansfield); 1 at Space Coast Regional Airport (*Brevard*) 18 Dec-6 Feb (M. Harris); 1 at Weeki Wachee 19 Dec (N. Armstrong et al.); 1 at Playalinda Beach (*Brevard*) 20 Dec (M. Harris); up to 2 at M and M Dairy (*Duval*) 23 Dec-7 Jan (+K. Dailey); 1 at Sweetwater Wetlands Park 1 Jan (L. Hensley, H. Adams); 5 at Gulf Breeze 3 Jan (B. Duncan, L. Duncan et al.); 2 at Spring Hill (*Hernando*) 1 Feb (C. Yarrow, M. Yarrow); 1 at Imeson Center 10 Feb (+K. Dailey).

EASTERN KINGBIRD: 1 at Lake Jessup 6 Dec (K. Beard); 1 at Pine Meadows CA 7 Feb (B. Matasick).

SCISSOR-TAILED FLYCATCHER: 1 at Fort De Soto Park 6-9 Dec (R. Snow, +B. Hoffman); 1 at Binion Road Retention Pond (*Orange*) 22 Dec (K. Rigling); 1 at West Keene Road (*Orange*) 26 Dec-5 Jan (P. Seigler); 1 at Brooker Creek Preserve (*Pinellas*) continued through 17 Jan (fide R. Smith); 1 at Inverness (*Citrus*) 1 Jan (E. Riccio, J. Meyer); 1 at Mary Esther (*Okaloosa*) 26 Jan (B. Duncan, L. Duncan).

*THICK-BILLED VIREO: 1 at Marjory Stoneman Douglas Nature Center (*Miami-Dade*) 17 Jan-EOS (m. obs.).

YELLOW-THROATED VIREO: 1 at Jungle Trail 15 Feb (+M. Harris).

WARBLING VIREO: 1 at Greynolds Park (*Miami-Dade*) 25 Jan-16 Feb (G. Hamlin, S. Juan).

HORNED LARK: 1 at Sweetwater Wetlands Park 17 Dec (D. Rohan); up to 13 at Cross City (*Dixie*) 13 Dec-EOS (S. Goodman, D. Robbins et al.); 3 near Greenwood (*Jackson*) 4 Jan (M. Miller, J. Murphy).

PURPLE MARTIN: 1 at Newfound Harbor Drive (*Brevard*) 8 Dec (C. Freas); 1 at Sweetwater Wetlands Park 5 Jan (S. Wilcox et al.).

NORTHERN ROUGH-WINGED SWALLOW: 2-3 at Lake Maggiore 12-27 Dec (+J. Clayton); 1 at St. Sebastian River Preserve SP 27 Dec (D. Simpson); 1 at Lake Harney Wilderness Area 5 Jan (S. Collins); 1 at Eastman/Taminco Sanctuary 14 Jan (L. Kelly); 1 at International Paper Wetlands 28 Feb (J. Callaway, B. Callaway).

BANK SWALLOW: Up to 6 at Paynes Prairie Preserve SP 8-30 Jan (C. Burney, C. Poli).

CAVE SWALLOW: 1 at St. Marks NWR 28 Feb (J. O'Connell).

BARN SWALLOW: 2 at Sweetwater Wetlands Park 3 Dec (A. Lamoreaux); 1 at Sweetwater Wetlands Park 10 Jan-4 Feb (C. Poli et al.); 1 at Dawson Brown Road (*Volusia*) 30

Jan-3 Feb (M. Brothers); 1 at Stenstrom Bridge area (*Volusia*) 17 Feb (D. LaGrange); 1 at Gulf Breeze 21-27 Feb (B. Duncan).

Carolina Chickadee: 1 at Middleton Fish Camp (*Indian River*) 10 Feb (R. Shannon).

Red-breasted Nuthatch: Up to 3 at Gainesville throughout the season (S. Lasseter, G. Israel); 2 at Alligator Point 1 Dec-EOS (J. Murphy); 1 continued at Boyd Hill Nature Preserve through 15 Dec (+ R. Smith); 1 at Shiloh Road (*Brevard*) 1-3 Dec (+K. Matera); 1 at Fred Road (*Volusia*) 3 Dec, 19 Jan, 14-27 Feb (M. Brothers); 3 at Guana River WMA (*St. Johns*) 4 Dec (+D. Reed); 1 at Pine Flatwoods Trail (*Brevard*) 9-13 Dec (M. Harris); 1 at Seminole SF 15 Dec (T. Rodriguez); 1 at Weeki Wachee 18 Dec-EOS (J. Gehman et al.); 1 at George C. McGough Nature Preserve (*Pinellas*) 19 Dec (+W. Meehan); 1 at Branford (*Lafayette*) 29 Dec-2 Jan (B. Ewing, S. Ewing); 1 at Holder Park (*Brevard*) 30 Dec (C. Ferro); 1 at Orange Park (*Clay*) 31 Dec (+C. Long); 1 at Guana Tolomato Matanzas NERR (*St. Johns*) 6 Jan (+A. Tanner); 1 at Pine Meadows CA 21 Jan-17 Feb (G. Quigley).

White-breasted Nuthatch: 1 at Wakulla Springs SP (*Wakulla*) 21 Feb (E. Orf, +J. Murphy).

Golden-crowned Kinglet: 1 at Eagle Lake Park (*Largo*) 10 Feb (*fide* R. Smith).

Swainson's Thrush: 1 at Crescent Executive Court (*Seminole*) 1 Dec (S. Collins).

Wood Thrush: 1 at Largo 7 Dec (+T. Young).

*Sprague's Pipit: 1 at Apalachicola airport (*Franklin*) 28 Jan (A. Vaughan, P. Vaughan, J. Murphy).

Purple Finch: 39+ in *Alachua* throughout the season (A. Lameroux, A. Hawkins et al.); 1 at a *St. Johns* feeder 13 Jan (+S. Carroll); 5 at Columbia City (*Columbia*) 29 Jan-18 Feb (J. Krummrich et al.).

Pine Siskin: 59+ throughout *Alachua* throughout the season (Z. Holmes, R. Robinson et al.); 1 at Kelly Park (*Orange*) 8 Dec (L. Mathis); 2 at Pinellas Park 15 Dec (B. Ahern, +J. Mangold et al.); 2 at Largo 15-16 Dec (M. Hughes, +R. Smith et al.); 1 at Lake Apopka Wildlife Drive 16 Dec (P. Hueber); 1 at Wickham Court (*Seminole*) 22-26 Dec (R. Stalnaker); 1 at Wekiva Springs SP 28 Dec (M. Rozmarynowycz); 1 at Spring Lake Hills (*Seminole*) 3 Jan (P. Hueber); up to 8 at Chinsegut Conservation Center (*Hernando*) 11 Jan-EOS (K. Rosse et al.); 4 at Fort Caroline (*Duval*) 21-26 Jan (+L. Royce); 1 at Boyd Hill Nature Preserve 26 Jan (+A. Ruben, P. Waton).

Ovenbird: 1 at Miccosukee Land Co-op (*Leon*) 15 Jan-14 Feb (B. Phelan).

Louisiana Waterthrush: 1 at Brooksville 18 Jan (C. Cock); 1 at Highlands Hammock SP (*Highlands*) 4 Feb (A. Moss).

Northern Waterthrush: 1 at Brooker Creek Preserve 29 Dec-24 Jan (+M. James et al.); 1 at Brooksville 6 Jan (D. Grimes).

Golden-winged Warbler: 1 continued at Wakodahatchee Wetlands (*Palm Beach*) 1 Dec-EOS (m. obs.).

Black-and-white Warbler: 1 at Pace (*Santa Rosa*) 2 Dec (D. Stangeland); 1 at Shalimar (*Okaloosa*) 17 Dec (B. Bremser).

Nashville Warbler: 2 at Gainesville 16 Dec-23 Feb (S. Collins, A. Zions); 2 at Eastman/Taminco Sanctuary 21 Jan (L. Kelly, B. Furlow); 1 at Maritime Hammock Preserve (*Brevard*) 12 Feb (P. Mansfield).

*Mourning Warbler: 1 at Jungle Trail 15 Feb (J. Szyba).

American Redstart: 10 in *Alachua* throughout the season (H. Jones, C. Poli et al.); 1 female at Gemini Spring Park 16 Dec (+D. LaGrange); 1 at Eastman/Taminco Sanctuary 3 Jan (L. Kelly); 1 at Seaton Creek Historic Preserve (*Duval*) 13 Jan (+K. Dailey).

Cape May Warbler: 1 at Satsuma (*Putnam*) 3 Dec-EOS (C. Foil); 1 at Oak Place (*Seminole*) 26 Dec (J. Rosado); 1 at Stonecrop Street (*Indian River*) 5 Jan (W. Johnson); 1 at a Largo 30 Jan (+T. Knuth); 1 at Holder Park (*Brevard*) 14 Feb (+G. Peterson).

Magnolia Warbler: 1 at Sweetwater Wetlands Park 5 Dec-EOS (A. Lamoreaux et al.); 1 at Orlando Wetlands Park 10 Dec-9 Feb (+K. Hamblett); 1 at Vero Outlet Mall (*In-*

dian River) 24 Dec (M. Smurl); 1 at Brooker Creek Preserve 30 Dec-20 Jan (+T. Mast, M. James et al.); 2 at Highlands Hammock SP 14 Jan (E. Bradley).

Blackburnian Warbler: 1 at Seminole Springs Grove (*Lake*) 24 Dec (D. Richard); 1 at Hollywood (*Broward*) 24 Dec (A. Harper).

Yellow Warbler: 1 at Lake Apopka Wildlife Drive 1 Dec-24 Feb (C. Marshall); 1 at South Lake CA (*Brevard*) 23 Dec (B. Hoeltke); 1 at Abbey Lane (*Orange*) 29 Dec (K. Hamblett); 1 at Eastman/Taminco Sanctuary 7 Jan (L. Kelly, L. Goodman); 1 at C. S. Lee Park (*Seminole*) 8 Jan (J. Leavens); 1 at Lake Mendsen Park (*Orange*) 8 Feb (J. Sullivan).

Blackpoll Warbler: 1 at Jungle Trail 15 Feb (+M. Harris).

Black-throated Green Warbler: 4 at *Alachua* County 7 Dec-EOS (A. Zions, T. Anderson et al.); 1 at College Park (*Orange*) 11 Dec (M. Sharpe); 1 male at Brumley Road, Little Big Econ (*Seminole*) 26 Jan (+D. Scitney).

Wilson's Warbler: 1 at Gemini Spring Park 2 Jan (+D. LaGrange); 1 at S Jacksonville (*Duval*) 3 Jan (A. Craig); 1 at Tosohatchee WMA (*Orange*) 24 Jan (G. Armistead).

Yellow-breasted Chat: 9 at *Alachua* throughout the season (L. Hensley, T. Anderson et al.); 1 at Laughlin Road (*Orange*) 22 Dec (G. Quigley); 1 at Alligator Point 15 Jan-23 Feb (+J. Murphy); 1 at Merritt Island NWR 29 Jan (+M. Harris); 1 at Pine Flatwoods Trail 7 Feb (+M. Harris).

*Western Spindalis: 1 female at Marjory Stoneman Douglas Nature Center 11 Feb-EOS (m. obs.).

*Bananaquit: 1 at Crocodile Lake NWR (*Monroe*) 20 Dec (m. obs.); 1 at Crandon Park (*Miami-Dade*) 22-24 Feb (L. Gles).

*Yellow-faced Grassquit: 1 at Charles "Sonny" McCoy Indigenous Park (*Monroe*) 18 Feb-EOS (C. Goodrich), documentation to FOSRC.

Clay-colored Sparrow: 1 at Salt Lake WMA (*Brevard*) 1 Dec (+M. Harris); 1 at Sweetwater Wetlands Park 16 Dec-EOS (S. Collins et al.); 1 at Lake Apopka North Shore-McDonald Canal Boat Ramp (*Lake*) 17 Dec-24 Feb (L. Keyes); 1 at Lake Apopka North Shore Trailhead (*Lake*) 22 Dec-17 Feb (F. Fogarty); 1 at Gulf Breeze 26 Dec (B. Duncan, L. Duncan, S. Duncan); 1 at Dixie Way (*Brevard*) 24 Jan (+M. Harris); 1 at Smith Creek Landing, North Peninsula SP (*Volusia*) 8-18 Feb (+D. LaGrange); 1 at Newnans Lake SF (*Alachua*) 15 Jan (J. Mays); 1 at S Jacksonville 10 Feb-EOS (C. Phillips).

Field Sparrow: 1 at Canal Street (*Seminole*) 2-3, 19 Dec-12 Jan (P. Hueber); 1 at Lake Apopka Wildlife Drive 23-25 Dec (T. Besacon); 1 at Black Hammock (*Seminole*) 29 Dec (P. Hueber); 1 at South Lake CA (*Brevard*) 30 Dec-5 Feb (+M. Harris); 1 east of Brooksville 28 Jan-EOS (J. Mann, S. Mann et al.).

Vesper Sparrow: Up to 7 at Brooker Creek Preserve 7 Nov-9 Feb (+T. Mast, M. James).

Lark Sparrow: 1 at Little Talbot Island SP 23 Jan (+C. Phillips); 1 at Fort Pickens 24-28 Feb (J. Callaway et al.); 1 at a *De Soto* feeder 26 Jan (+J. Pipher).

Grasshopper Sparrow: 2 at M and M Dairy 25-30 Dec (+K. Dailey).

Henslow's Sparrow: 1 at Lake Tracy Unit (*Lake*) 1 Dec (+M. Keim); 3 at Apalachicola NF (*Liberty*) 27 Jan (A. Vaughan, P. Vaughan, J. Murphy); 1 at Pine Meadows CA 3-16 Feb (+J. Groskopf); 1 at Bull Hammock (*Lake*) 17 Feb (T. Greenberg).

Le Conte's Sparrow: 1 at Marl Bed Flats 21 Dec (S. Simmons).

Fox Sparrow: 1 at Tallahassee (*Leon*) 17 Dec-23 Feb (B. Scott, +H. Hooper, L. Reynolds, K. Carr); 2 at Seaton Creek Historic Preserve 13 Jan (+K. Dailey).

Song Sparrow: 1 at WSEG boat ramp (*Brevard*) 4 Dec (P. Marvin); 1 at South Lake CA 30 Dec-17 Jan, 4 Feb (+M. Harris); 1-2 at Brooker Creek Preserve 7 Dec-3 Feb (R. Smith, +T. Mast et al.); 1 at Ritch Grissom Memorial Wetlands at Viera 20 Jan (R. DePrato); 1 at Visitors Center (*Brevard*) 3 Feb (R. Smith).

Lincoln's Sparrow: 1 at Brooker Creek Preserve 7-22 Dec (+T. Mast et al.); 1 at Lake Apopka North Shore Trailhead 13 Dec-21 Jan (J. Walker); 1 at Lake Apopka Wildlife Drive 16 Dec-18 Feb (+P. Hueber); 1 at Brumley Road Trailhead (*Seminole*) 24 Dec

(S. Simmons); 1 at St. Sebastian River Preserve SP 29 Dec (J. Drucker); 1 at Tall Timbers Research Station (*Leon*) 23 Feb (+J. O'Connell).

White-throated Sparrow: 1 at Lake Apopka Wildlife Drive 16 Dec-2 Jan (+P. Hueber); 1 at Marl Bed Flats 29 Dec (S. Collins); 1 at South Lake CA (*Brevard*) 31 Dec-17 Jan (+S. Jones); 1 at Largo Nature Preserve 10 Jan-5 Feb (+E. Plage).

White-crowned Sparrow: 1 at Haulover Canal area (*Brevard*) 1 Dec (+K. Matera); 1 at Pine Flatwoods Trail 1 Dec (P. Marvin); 1 at Lake Seminole Park 3 Dec (*fide* R. Smith); 1 adult at Roosevelt Wetland (*Pinellas*) 12 Dec (+J. Mangold); 6 at Tall Timbers Research Station 23 Feb (J. O'Connell); 1 at Lake Apopka Wildlife Drive 16 Dec (A. Green); 1 (Gambel's) at Lake Apopka North Shore-McDonald Canal Boat Ramp 4-20 Jan (G. Quigley); 1 at Jungle Trail 6 Jan (+W. Johnson).

Dark-eyed Junco: 5 at *Alachua* throughout the season (B. Pirzer, C. Burney et al.); 1 at a Hyde Grove residence (*Duval*) 17 Dec (+C. Wainwright); 2 at Tall Timbers Research Station 5 Jan (J. O'Connell); 1 at The Villages (*Sumter*) 1 Feb (C. Ferro); 1 at S Jacksonville 11 Feb (C. Phillips).

Summer Tanager: 1 at West Hornbeam Drive (*Seminole*) 1 Dec-19 Feb (S. Collins); 2 at Tallahassee 1 Dec-EOS (S. Phillips); 11 reported at *Escambia, Santa Rosa, & Okaloosa* counties 5 Dec-28 Feb (m. obs.); 11 at Gainesville throughout the season (L. Hensley, J. O'Connor et al.); 1 at Fort De Soto Park 4 Dec (R. Miller); 1 at Wekiva River 15 Dec (B. Matasick); 1 female at Lake Apopka Wildlife Drive 16 Dec (+P. Hueber); up to 3 at *Citrus* 25 Dec-EOS (David Kaminski, Jill Kaminski et al.); 1 female at Blue Springs SP (*Volusia*) 31 Dec, 25 Jan (D. Blockstein); 1 at a NE St. Petersburg yard 1 Jan-22 Feb (+J. Clayton); 1 at Bushnell (*Sumter*) 25 Jan (J. Hoch); 1 female at Meadow Lake Drive (*Volusia*) 5 Feb (D. Young); 1 at Aristotle Avenue (*Orange*) 8, 26 Feb (M. Owen).

Scarlet Tanager: 1 at Key West Tropical Forest and Botanical Gardens (*Monroe*) 3-15 Feb (m. obs.).

Western Tanager: 1 at Gainesville 6 Jan-EOS (S. Palmer, C. Burney et al.); 1 at Inverness 21 Feb (E. Smith).

Rose-breasted Grosbeak: 1 at Gainesville throughout the season (A. Kratter); 1 at Crescent Drive (*Brevard*) 1 Dec, 25-28 Feb (L. Pernaz-Giz); 1 male at W Pensacola 8-18 Dec (K. Stanmore); 1 female at W Pensacola 16 Dec (M. McGahan); 1 at Apalachicola 28 Dec-8 Jan (S. Jones, J. Murphy); 1 at Tallahassee 29 Jan-13 Feb (D. Jue, S. Jue, F. Rutkovsky, J. Cavanagh).

*Black-headed Grosbeak: 1 at W Pensacola 17 Dec-11 Jan (M. Quigley, J. Yuhasz).

Blue Grosbeak: 1 at Gulf Breeze 22 Dec (B. Duncan, L. Duncan).

Indigo Bunting: 14 at *Alachua* throughout the season (J. Mays, A. Kratter et al.); 2 at Gulf Breeze 12-30 Dec (D. Timmons, B. Duncan, L. Duncan); 1 at Cantonment (*Escambia*) 22 Feb (J. Callaway, B. Callaway).

Painted Bunting: 1 female at Gulf Breeze 2-11 Dec (B. Duncan, L. Duncan); 46 in *Alachua* throughout the season (L. Predny, A. Kratter, et al.).

Dickcissel: 1 at Shiloh Marsh Road 6 Jan (C. Ferro); 1 at Crescent Drive 8-9 Jan (+L. Pernas-Giz).

Bobolink: 1 at Orlando Wetlands Park 23 Feb (A. Whitlock).

Yellow-headed Blackbird: 1 at Orlando Wetlands Park 10 Dec (K. Hawklee); 1 at Lake Maggiore 13 Dec-26 Jan (+K. Duncan, P. Waton); 1 at Wildwood (*Sumter*) 22 Jan-11 Feb (W. Milstein, P. Domm).

Rusty Blackbird: 1 at Brooker Creek Preserve 8 Dec (+T. Mast); 1 at Pine Meadows CA 20 Dec (D. Richard); 15 at Sampey Road (*Lake*) 5 Jan (B. Streeper); 2 at M and M Dairy 20 Jan (+K. Dailey); 14 at Lake Henrietta (*Leon*) 21 Feb (E. Orf, +J. Murphy).

Brewer's Blackbird: 1 female at Lake Winona Road (*Volusia*) 9 Jan-13 Feb (+M. Brothers).

Shiny Cowbird: 2 at Tequesta Drive (*Brevard*) 31 Dec (P. Olsen).

Bronzed Cowbird: 1 at Lake Maggiore 14-15 Dec (M. Burns, +E. Haney et al.); 1 at Glen Oaks Park (*Pinellas*) 1 Jan (+W. Meehan).

Orchard Oriole: 1 at Gainesville 31 Dec-11 Feb (R. Robinson); 1 at Gemini Springs Park 21 Feb (R. Peterson).

Baltimore Oriole: 1 male at Cantonment 22 Jan (M. Werdung).

Dedication

This report is dedicated to John Hintermister, who passed away 24 March 2019. John's contributions to this seasonal report, to *American Birds,* and to *North American Birds* span five decades. His observations have been in nearly each field report since *American Birds* Volume 27, Number 3, in June 1973.

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(1) be double-spaced throughout, including table- and figure captions;

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Florida Field Naturalist 47(4):131-143, 2019.

A HISTORY OF COMMON EIDER (*Somateria mollissima*) OCCURRENCES AND HABITS IN NORTHEAST FLORIDA (NASSAU, DUVAL, AND ST. JOHNS COUNTIES)

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Abstract.—The Common Eider (*Somateria mollissima*) is the most widely studied sea duck in North America, but most research on this species has focused on its breeding ecology, diet, and the effects of contaminants on mortality. Thus, there is an interest in and need to better understand the species' range, habits, and demography outside of its breeding range. This article summarizes the twenty-six known individuals across twenty-one reported occurrences of Common Eider in northeast Florida dating back to 1970 and includes information about certain habits that corroborate known characteristics while challenging other existing understandings about the species.

INTRODUCTION

The Common Eider (*Somateria mollissima*) is the largest duck in the Northern Hemisphere, and four subspecies are recognized in North America. While it is the most widely studied sea duck in North America, the majority of studies are based on breeding ecology, diet, and the effects of contaminants on mortality. There is a clear interest in and need for better understanding of the species' range, habits, and demography outside of its breeding range (Goudie et al. 2000).

The four subspecies' range and occurrence outside their respective breeding grounds are not entirely well understood, but it is assumed that Common Eiders reaching the state of Florida are of the "American" race, *S. m. dresseri*, whose usual breeding grounds are around the rim of the Arctic Ocean, Hudson Bay, and the Gulf of St. Lawrence, though they sometimes breed as far south as Boston Harbor and Buzzards Bay, Massachusetts. Their normal winter range extends only a little

farther south to Long Island, New York (Bellrose 1980, Goudie et al. 2000). However, vagrants occur near-annually along Florida's Atlantic coast where they are still considered a very rare transient. They have strayed as far south as Dry Tortugas National Park, Monroe County, Florida, the southernmost record for the species (Greenlaw et al. 2014). The distance they travel by any possible measured route would exceed 2,000 miles each way (Greenlaw et al. 2014).

From the first record in 1970 through 2018, there have been 21 documented observations of the species in northeast Florida (Nassau, Duval, and St. Johns counties). Following the initial observation, over twenty years passed before the next report on 3 February 1993; fifteen years of sporadic reports followed, but since 2010 these eiders have been recorded annually in the region. Little is known about their migration patterns or how they behave outside of their usual range, particularly in winter months.

An examination and closer study of these 21 observations has reaffirmed many known traits and behaviors exhibited by the species, but has also identified previously undocumented characteristics that may challenge existing ideas. This analysis includes a mixture of historical reports, personal observations, and the examination of extant photographs of all 26 Common Eiders reported across these 21 occurrences in northeast Florida. Performing an assessment of all observations versus a selection of a smaller sample size has led to the most comprehensive possible analysis and conclusions.

Methods

Data on Common Eider observations in northeast Florida are based upon previously published field notes in journals, eBird, and List Servers. A manual review of *Audubon Field Notes*, *American Birds*, and *North American Birds* dating back to 1945 was conducted, as well as a thorough search of the *Florida Field Naturalist's* Field Observations reports, and previously published books on Florida birds. In addition to this review of printed material, a search of the Searchable Ornithological Research Archive (SORA, sora.unm.edu) was performed using a combination of keyword searches including "Common Eider," "Florida," "Jacksonville," "Duval County," "St. Johns County," and "Nassau County." A search of the "Florida Birds" listserver (lists.ufl.edu) archives using a similar keyword search was also performed.

The eBird database of bird observations was queried to identify reported and validated sightings of Common Eider in Florida. Every observation was then reviewed to identify the high count for the species, and the plotted location in eBird was then used to determine the approximate GPS coordinates listed in Table 1. Common Eider is a species that should be flagged as "rare" in eBird in all Florida counties and in all seasons, but there are a couple of reports that are in a validated status with no supporting comments or documentation (photo, sketch, or video). As such, those observations were discarded from this study.

Since the eBird species map renders every observation made by dozens of observers of a single bird, it creates an almost indecipherable view when attempting to specify the occurrence of a single bird over the duration of its presence. Thus, following the data col-

Table 1. Summary of Common Eider records in northeast Florida through 31 Dec 2018. Numbered observations accompanied by an asterisk (*) denote that no photograph is available; those with a plus sign (+) indicate that one or more photographs are available. Those with a caret (^) indicate identification can most likely be assigned to the subspecies *S. m. dresseri*, although no measurements are available.

No.	Date(s)	Age/Sex	Location	County	Latitude	Longitude	Reference
1 *	25 Nov 1970-4 Feb 1971	Not recorded	Fort George Inlet	Duval	30.418068	-81.414895	(Below 1983)
2 *	3-16 Feb 1993	First-year male (FYM)	Nassau Sound	Nassau	30.520966	-81.449040	(West & Wamer 1993) (Pranty 1993)
3 *	19-30 Nov 2006	FYM & F (not aged) on 28th	Fort Clinch State Park Pier	Nassau	30.7026918	-81.4223965	eBird
4 +^	16 Dec 2006	Adult female	St. Augustine Inlet	St. Johns	29.909502	-81.297031	Listserv
5 *	3-10 Feb 2007	FYM & F (not aged)	St. Augustine Inlet	St. Johns	29.909502	-81.297031	eBird
6 *	4 May 2010	FYM	South Ponte Vedra Park	St. Johns	29.9906467	-81.3147604	eBird
7 *	18-24 Dec 2010	FYM	Nassau Sound	Nassau	30.520966	-81.449040	(Pranty 2011)
8 +	24 Jan-17 Mar 2011	One F & one FYM	Huguenot Memorial Park	Duval	30.405543	-81.406508	(Pranty 2011)
9 +^	16-17 Dec 2012	FYM	Huguenot Memorial Park	Duval	30.405543	-81.406508	(Pranty 2013)
10 +^	29 Dec 2012	FYM	Mayport Ferry slip; different bird than #9	Duval	30.395698	-81.435544	eBird
11 +	7 Nov 2013	Female	N Amelia River	Nassau	30.694206	-81.465089	eBird (Ahern, 2014a)
12 *	9 Nov 2013	Female, not aged	Little Talbot Island State Park	Duval	30.459453	-81.411093	eBird
13 +^	15-18 May 2014	Adult female	Huguenot Memorial Park	Duval	30.405543	-81.406508	(Ahern 2014b)
14 +^	7 Nov 2014	Adult male	Huguenot Memorial Park	Duval	30.405543	-81.406508	(Ahern 2015a)
15 +^	18 Nov 2014-9 Mar 2015	FYM	Nassau Sound	Nassau	30.520966	-81.449040	(Dailey 2015)
16 +^	14-15 Jan 2016	Adult female	S Amelia River	Nassau	30.5381643	-81.4646959	eBird (Dailey 2016a)
17 +^	3 Feb-8 Mar 2016	Adult, eclipse male	Fort Clinch State Park Pier	Nassau	30.7026918	-81.4223965	eBird (Dailey 2016a)
18 *	4 Apr 2016	First-winter male	ICW S of St. Johns River	Duval	30.3154876	-81.4325416	(Dailey 2016b)

Table 1. Continued. Summary of Common Eider records in northeast Florida through 31 Dec 2018. Numbered observations accompanied by an asterisk (*) denote that no photograph is available; those with a plus sign (+) indicate that one or more photographs are available. Those with a caret (^) indicate identification can most likely be assigned to the subspecies *S. m. dresseri*, although no measurements are available.

No.	Date(s)	Age/Sex	Location	County	Latitude	Longitude	Reference
19a +^	6 May 2017	First-winter male	Huguenot Memorial Park	Duval	30.405543	-81.406508	eBird (Dailey 2017)
19b +^	6 May-11 Jun 2017	First-winter male (same bird as 19a)	Mayport Ferry slip (west side of St. Johns River)	Duval	30.395698	-81.435544	eBird (Dailey 2017, Dailey 2018a)
20+^	11 Feb 2018	2 FYM & F	N Amelia River, Fernandina Beach Marina	Nassau	30.68395	-81.460283	eBird (Dailey 2018b)
21+^	28 Dec 2018	1 FYM	Black Hammock Island, Pumpkin Hill Creek	Duval	30.519508	-81.493636	eBird

lection each observation was plotted using Google maps to render a cleaner depiction of the distribution (Fig. 1). Infographic software was then used to annotate the Google map image using labels that correspond to Table 1. The data from each report were further assessed to determine age, sex, behavior, and use of habitat.

Records of Occurrence

From November 1970 through December 2018 there have been 21 documented observations of Common Eider in northeast Florida, consisting of 26 individual birds (three observations were of two ducks each, together, and one record of three ducks together) (Fig. 1, Table 1). Note that in many cases, there were multiple observations of an individual bird by numerous observers and/or spanning a period of days, weeks, or even months. The continued presence of any one of these ducks over any such period of time is considered a single observation for purposes of this discussion.

Ten observations are from Duval County, eight from Nassau, and three from St. Johns. After reviewing available photographs, 14 of the 26 birds are strong candidates for the subspecies *S. m. dresseri* (Table 1), but measurements are generally required to confirm race (B. Allen, pers. comm.). Field notes regarding age or sex for one of the birds were not available, and of the remaining twenty-five birds, sixteen were reportedly male and nine were female. The majority of the observations occurred in small coastal bays, leeward inlets, and rivers.

The majority of observations are of single birds, which is consistent with most reports throughout the state of Florida (Greenlaw et al. 2014). Based on available resources, the high count of Common Eiders in Florida waters through 2017 was two, a record that occurred six times and just three times outside of the northeast Florida region. The first pair was reported 19 December 1962-January 1963 near Daytona (Volusia County), followed by two at Port Canaveral (Brevard County) November 1992 through 3 January 1993 (Stevenson and Anderson 1994), and a third report from the Fort Clinch State Park's (Nassau County) fishing pier in November 2006 (Table 1). A pair was noted at Vilano Beach (St. Johns County) on 7 February 2007 (eBird 2017). On 24 January 2011, an adult female and first-year male were photographed together at the mouth of the St. Johns River from Huguenot Memorial Park (Duval County). This pair was similar to the Vilano pair in that it consisted of a female and first-year male together; details on the other aforementioned pairs are not available. There is a recent sixth report of a pair in Florida from 29 January 2017, also at Port Canaveral (eBird 2017).

On 11 February 2018, three Common Eiders were photographed together in the northern Amelia River near the Fernandina Beach

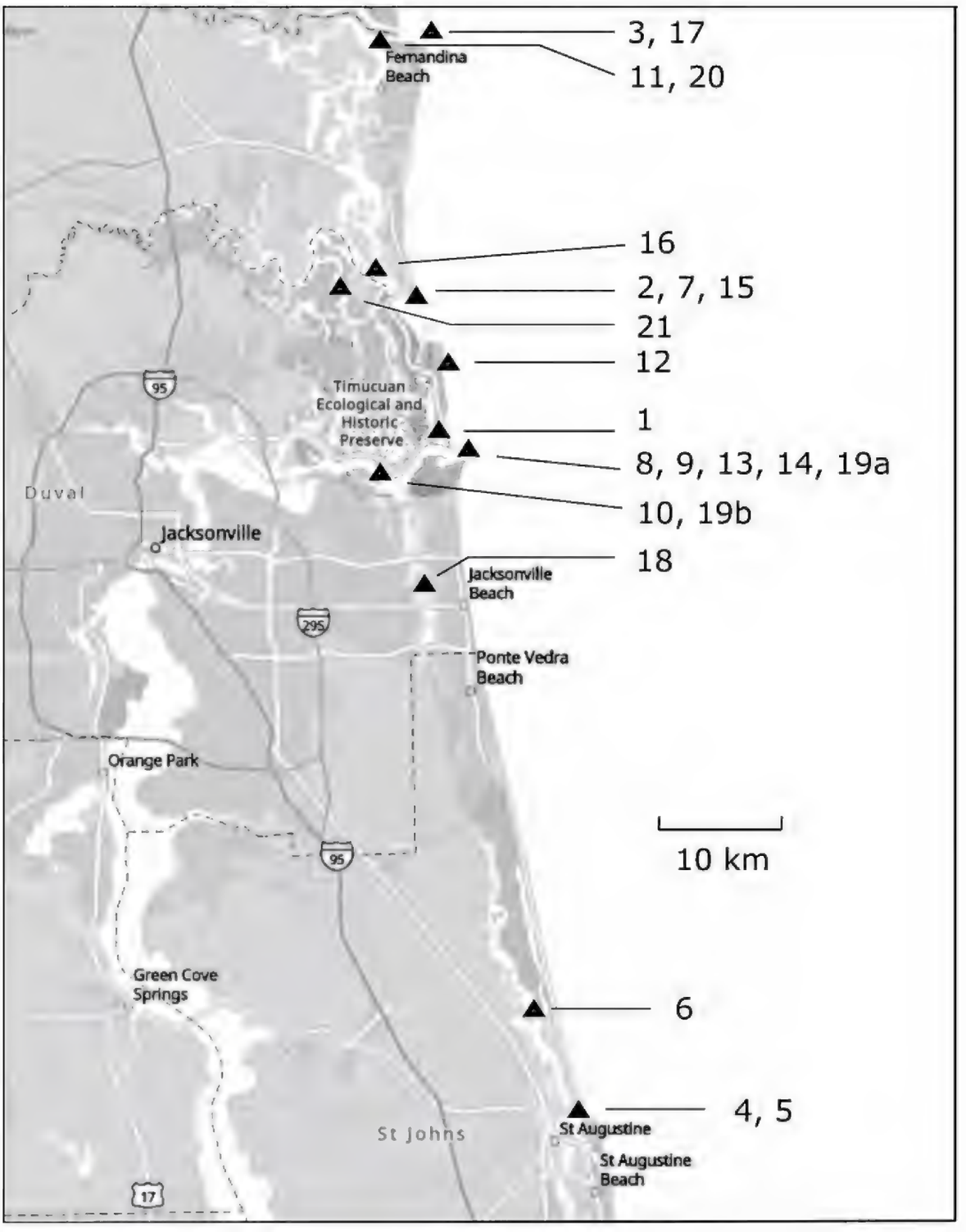

Figure 1. Distribution of Common Eiders in northeast Florida through December 2018.

marina, setting the new high count for the entire state. On 20 September 2018, three were recorded at Jetty Park in Brevard County, marking just the second state occurrence of more than two eiders together.

Duval County.—The earliest Common Eider report in Duval County was the fifth for Florida, an individual found at Fort George Inlet from 25 November 1970 through 4 February 1971 (Below 1983).

Although the bird lingered for over two months and was reported on that winter's Christmas Bird Count, details about the age and sex are not available. Forty years passed before the next Duval County observation, in the winter of 2011, a record of two birds near the extensive rock jetties at the mouth of the St. Johns River (the "Mayport jetties"). Two more records occurred in the winter of 2012; one of a first-year male in that same location followed by a differently plumaged young male about a mile farther up-river almost two weeks later (Table 1, Nos. 9 and 10). A female was reported just offshore of Little Talbot Island State Park in November 2013, and an adult female was recorded again at Huguenot Memorial Park from 15-18 May 2014 that following spring. An adult male was photographed November 2014 along the Mayport jetties and a first winter-male was well described (but not photographed) in the Intracoastal Waterway in April 2016. In May 2017, a first-winter male was first observed at Huguenot Memorial Park and very shortly up-river at the same location as No. 10 in 2012. The most recent record, from 28 December 2018, is of a male in Pumpkin Hill Creek, a tributary of the Amelia River; this latest eider is the most-inland occurrence in northeast Florida history.

Nassau County.—Of the eight reports from Nassau County, only two have come from the fishing pier that runs parallel to an extensive rock jetty at Fort Clinch State Park (November 2006 and February-March 2016). There have been three records from the Amelia River, which also serves as the Intracoastal Waterway (ICW) running through the county; two from the north end in Fernandina Beach (November 2013 and February 2018), the other from the south end near Nassau Sound (January 2016). The remaining records are from Nassau Sound, a coastal bay dividing Duval and Nassau counties at the Atlantic Ocean.

St. Johns County.—There have been just three reports of Common Eider from St. Johns County, all from winter 2006 through spring 2010, which is somewhat surprising given the county's 41 miles of coastline and the heavily trafficked bays and waterways of Matanzas and St. Johns inlets. Regardless, two of the three observations are from St. Augustine inlet, which is similar in size and sheltering conditions to Nassau Sound to the north. The most recent and third record is of a bird along the Atlantic coast at Ponte Vedra Beach, and was observed from shore by many astute observers. This bird was observed on 4 May 2010, and is the only St. Johns County report with available field notes regarding the eider's behavior: "Fed by standing on the beach, facing the waves, and waiting for the waves to reach him. Seen flapping, seemed to have full range of motion, but never saw in flight. Would slowly walk south down the beach" (eBird 2018).

Identification, Movements, and Behavior

Common Eiders are difficult to identify to age and sex except for alternately plumaged males. Fortunately, many of these observations are supported with photographs but identification is still challenging in some cases. The plumage of a female Common Eiders can vary as they age and can actually obtain color characteristics similar those of a second-year or eclipse male; this problem can become so challenging that sexing an individual may be possible only by dissection (Swennen et al. 1989).

Subspecies.—Identification to subspecies is made primarily based on the rounded shape of the frontal extension on the bill, which has some overlap with other races but is a fairly reliable field mark (Mendall 1986). Four subspecies of Common Eider occur in North America, and while none of the observations have been positively identified to subspecies, the working assumption is they are all *S. m. dresseri,* which breeds in coastal Quebec (Pyle 2008:127), New Brunswick, Nova Scotia, and New England.

Migration.—Common Eiders are known to migrate in flocks ranging from a "few individuals to thousands," so the overwhelming majority of single observations in Florida–with just a handful of reports including two or three birds–suggests that when eiders range as far south as Florida they are truly vagrants (Goudie et al. 2000).

Habitat.—The majority of the observations occurred in small coastal bays, leeward inlets, and rivers, as opposed to the purportedly more favorable locations like the open ocean, rocky outcroppings, or in areas of moderate to extreme turbulence.

The locations of the individuals recorded in northeast Florida are consistent in terms of opportunistic food sources, as the eiders have primarily lingered around extensive jetties, bridge pilings, ferry slips, or docks where food (barnacles, mollusks, and crustaceans) are in abundance. These locations, however, challenge previously published descriptions of winter habitat preferences, according to which they "rarely enter sheltered bays and coves" and seem to prefer areas where the sea breaks against rocks (Goudie et al. 2000). While this is consistent with the habitat at Fort Clinch State Park (Nassau County) and to some extent, Huguenot Memorial Park (Duval County), the majority of local records are of birds found in more sheltered areas like the ICW, Amelia River, St. Johns River, and the protected and often placid bay of Nassau Sound.

Foraging behavior.—Available literature on the foraging behavior of Common Eiders is consistent in describing it as primarily a diving species that will occasionally dabble, and that will often bring prey to the surface to consume (Goudie et al., 2000). There is no mention of an eider foraging or obtaining food from the surface or any structure above the water's surface. Several of the eiders observed in northeast Florida have exhibited behavior inconsistent with this notion, beginning with the St.

Johns County bird in 2010 (Table 1, No. 6), which was studied "waiting for the waves" to reach him on shore where it gleaned some sustenance from the surge.

The fifteenth northeast Florida bird, from Nassau Sound (Table 1, No. 15), wintered at the base of the George Crady Bridge Fishing Pier, which is immediately adjacent to the newer concrete Highway A1A bridge spanning Nassau Sound. This was a first-year male that was observed on multiple occasions scraping barnacles off the concrete pilings while floating on the surface; a behavior occasionally observed around piers in Maine where barnacles and periwinkles are present (B. Allen, pers. comm.).

In May 2017, a first-year male (Table 1, No. 19b) was observed at the Mayport Ferry slip (Duval County) taking barnacles off the slip's structure while floating (Fig. 2) and subsequently consuming them while swimming. On 30 December 2018, another first-year male (Table 1, No. 21) was recorded exhibiting the same behavior of scraping sustenance from the edge of a floating dock while swimming; the bird was not diving under the surface to search for food. This foraging behavior has not been previously described, and despite the small number of observations it is noteworthy for being so different from previously recorded behaviors.

Locomotion.—Common Eiders are strong swimmers that also exhibit a degree of grace and balance when walking on land, in large

Figure 2. A first-year male Common Eider pulling exposed barnacles from a dock piling. Photo by Kevin Dailey

part due to the more centrally located placement of their legs (Goudie et al. 2000). Based on personal observation and accounts from others, the locomotion of the northeast Florida eiders has been fairly consistent with published accounts, whereby they rarely leave water in winter but will rest on land as spring commences (Goudie et al. 2000), or come ashore to nest or roost.

All 26 of the eiders across the 21 observations have been observed in the water, either loafing, swimming, or actively diving. In addition, three of these birds have been recorded resting on land; two of those were in the month of May, but there is one outlier in the first year male that lingered at Nassau Sound from November 2014 through 9 March 2015 (Table 1., No. 15). No. 15 was actually observed walking or loafing on shore more often than in the water. Since the species is thought to rarely visit land in winter, this is perhaps a trait of young birds that are out of range, out of sorts, and likely ill.

Postural displays.—Johnsgard (1964) describes in great detail the courtship displays and behavior of all the eider species, including one referred to as the "Upward-stretch" in which the male pauses, rises out of the water to display the chest, and may shake the head before going back to a normal posture in the water. Various descriptions of these behaviors are based on observations of adult, sexually mature males but have not included reference to immature males exhibiting the behavior, or in the absence of a female (or other competing males) (Johnsgard 1964, Goudie et al. 2000). In Nos. 15, 19b, and 21, each of these first-year males exhibited this behavior often and in the absence of any other waterfowl (Figs. 3 and 4). While No. 19b did not extend the wings as part of this behavior, No. 15 did often add to the "Upward-stretch" the "Wing-flapping" portion of the courtship display (Fig. 4), which is a sequence of two to three flaps of the opened wings while in the raised position with the bill held at about a 45 degree downward angle (Johnsgard, 1964). The St. Johns County eider from May 2010 was observed "flapping" as it stood on shore, but unfortunately no further detail is available to suggest whether the behavior could be associated with Johnsgard's account of how the species displays. Given the circumstances, "wing-flapping" eiders observed in Florida are most likely doing so as a waterproofing technique.

Conclusions

After decades without an observation, Common Eiders have been reported near annually in northeast Florida over the last decade, suggesting there may be a correlation between a wintering range expansion and climate change. Regardless, their occurrence at the southern extremes of their range has afforded the opportunity to

Figure 3. A Common Eider performing the "Upward Stretch." Photo by Kevin Dailey.

study their behavior and suggest several conclusions that were either previously unrecorded or even challenge our existing knowledge of the species.

Based on analysis of the total population of northeast Florida reports, it can be assumed that most eiders seen in Florida arrive singularly or in small numbers (< 4), are of the race *S. m. dresseri*, and predominantly male. Despite the season (winter), these eiders

Figure 4. A Common Eider performing the "Wing-flap." Photo by Kevin Dailey.

are predominantly found in leeward or sheltered waters (bays, inlets, and rivers), which is contrast to their favored wintering grounds of the northeast Atlantic coast where they are said to favor open ocean, rocky shorelines, and turbulent waters.

The northeast Florida eiders seem to be opportunistic foragers; at least three of the individuals were photographed taking sustenance directly from bridge or dock pilings above the surface, while another seemed to skim food from the backwash of breaking waves. Additionally, these Florida ducks were observed loafing on shore for extended periods of time, a trait rarely documented for the species within their normal winter range.

Lastly, the young male eiders in northeast Florida have exhibited displaying behavior that is more consistent with spring-time courtship displays near their breeding grounds.

The Common Eider is still considered a fairly rare species to occur in Florida waters, and future occurrences should be carefully observed and documented to perhaps add to our growing understanding of these vagrant ducks in Florida waters.

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Literature Cited

Ahern, B. 2014a. Field Observations fall report: August-November 2013. Florida Field Naturalist 42:73-88.

Ahern, B. 2014b. Field Observations spring report: March-May 2014. Florida Field Naturalist 42:172-184.

Ahern, B. 2015a. Field Observations fall report: August-November 2014. Florida Field Naturalist 43:86-101.

Ahern, B. 2015b. Field Observations winter report: December 2014-February 2015. Florida Field Naturalist 43:125-136.

Bellrose, F. C. 1980. Ducks, Geese, and Swans of North America, 3rd ed. Stackpole Books, Harrisburg, Pennsylvania.

Below, T. 1983. The Common Eider in Florida. Florida Field Naturalist 11:51-53.

Dailey, K. 2015. Field Observations spring report: March-May 2015. Florida Field Naturalist 43:189-198.

Dailey, K. 2016a. Field Observations winter report: December 2015-February 2016. Florida Field Naturalist 44:132-142.

Dailey, K. 2016b. Field Observations spring report: March-May 2016. Florida Field Naturalist 44:178-188.

Dailey, K. 2017. Field Observations spring report: March-May 2017. Florida Field Naturalist 45:113-122.

Dailey, K. 2018a. Field Observations summer report: June-July 2017. Florida Field Naturalist 46:29-35.

Dailey, K. 2018b. Field Observations winter report: December 2017-February 2018. Florida Field Naturalist 46:78-88.

eBird. 2018. eBird: An online database for bird distribution and abundance. eBird, Cornell Lab of Ornithology, Ithaca, New York. <http://ebird.org>. Accessed 18 May 2017 and 20 November 2018.

Goudie, R. I., G. J. Robertson, and A. Reed. 2000. Common Eider (*Somateria mollissima*), version 2.0. *In* The Birds of North America (A. F. Poole and F. B. Gill, Eds.). Cornell Lab of Ornithology, Ithaca, NY, USA. <https://doi.org/10.2173/bna.546>.

Greenlaw, J. S., B. Pranty, and R. Bowman. 2014. The Robertson and Woolfenden Florida Bird Species: An Annotated List. Special Publication No. 8, Florida Ornithological Society, Gainesville.

Howell, S. N. 2010. Molt in North American Birds. Houghton Mifflin Harcourt, New York, New York.

Johnsgard, P. A. 1964. Comparative behavior and relationships of the eiders. Condor 66:113-129.

Markgraf, V. M. 1971. Jacksonville, Florida, Christmas bird count. American Birds 25:285-286.

Mendall, H. L. 1986. Identification of eastern races of the eider. Pages 82-88 *in* Eider Ducks in Canada (A. Reed, Ed.). Canadian Wildlife Service Report Series No. 47. Ottawa, Ontario.

Pranty, B. 1993. Field Observations winter report: December 1992-February 1993. Florida Field Naturalist 39:94-107.

Pranty, B. 2011. Field Observations winter report: December 2010-February 2011. Florida Field Naturalist 41:90-103

Pranty, B. 2013. Field Observations winter report: December 2012-February 2013. Florida Field Naturalist 41:90-103.

Pyle, P. 2008. Identification Guide to North American Birds, Part II: Anatidae to Alcidae. Slate Creek Press, Point Reyes Station, California.

Stevenson, H. M., and B. H. Anderson. 1994. The Birdlife of Florida. University Press of Florida, Gainesville.

Swennen, C., P. Duiven, and G. J. M. Wintermans. 1989. Abnormal plumage in possibly senile female Eiders Somateria mollissima. Wildfowl 40:127-130.

West, R. L., and N. Wamer. 1993. Florida Region. American Birds 47:250.

Florida Field Naturalist 47(4):144-146, 2019.

FLORIDA SCRUB-JAYS (*Aphelocoma coerulescens*) DECAPITATE AND EAT HEADS OF FLORIDA IVORY MILLIPEDES (*Chicobolus spinigerus*)

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Millipedes (class Diplopoda) are prey for a wide variety of animals including invertebrates, mammals, reptiles, amphibians, and birds (Hopkins and Read 1992, Shelley 1999). Millipedes of the order Spirobolida are often large and slow-moving, easily attracting the attention of predators; however, predators are likely to be repelled by the strong, irritating chemical compound, 1,4-benzoquinone, secreted by many spirobolids (Blum 1981, Attygalle et al. 1993, Eisner 2003, Shear 2015). Here we report a predatory tactic that allows a bird to circumvent a spirobolid's chemical defense in order to feed on part of it.

Spirobolid millipedes have several defenses to repel potential predators. This includes coiling the body into a spiral with the head in the center and deploying defensive secretions of noxious chemicals (Eisner 1970). The millipedes have paired lateral oozing glands along most segments of the body but seem to lack them in segments immediately behind the head (Eisner 1970, Hopkins and Read 1992). These glands are simple pores that open and emit toxic secretions at the site of attack. By coiling the body when threatened, the head is brought within range of gland-bearing segments of the body for protection (Eisner 1970). In one spirobolid, the Florida ivory millipede (*Chicobolus spinigerus*) the two major components comprising 95% of the defensive secretion are 2-methyl-1,4-benzoquinone and 2-methoxy-3-methyl-1,4-benzoquinone (Blum 1981, Attygalle et al. 1993, Eisner 2003, Shear 2015). Quinones are irritating secretions, causing itching or pain to the exposed area. They are a common defense in many arthropods and have been shown to immediately cause predators to desist, retreat, and clean themselves. Invertebrates will use their front legs to cleanse antennae and drag mouthparts in soil. Frogs and lizards will spit the prey out and scrape their tongue and mouth. Rodents will wipe their muzzle with their paws or thrust it into soil. Similarly, birds will wipe their eyes and rub their head in their plumage (Eisner 1970).

Florida ivory millipedes are native to Florida, Georgia, and eastern South Carolina. They have the smooth cylindrical bodies (Shelley 1999) typical of this order. The dorsum is dark brown with posterior bands of light brown, yellow, or orange, narrow at the dorsal apex and growing wider ventrally until they cover the ventral side. Males range in size from a length of 39.0-85.0 mm and width of 4.4-9.5 mm. Females are slightly larger with lengths and widths ranging from 43.0-91.0 mm and 5.2-10.3 mm, respectively (Keeton 1960). Like most millipedes, they live in moist soil and feed primarily on decaying plant material (Hopkins and Read 1992). By burrowing through the leaf litter and soil, they reduce debris and aid soil nutrient cycling (Shelley 1999).

The Avon Park Air Force Range (APAFR) is a 43,000 ha active military training facility in Polk and Highlands counties, Florida. The Air Force oversees long-term monitoring of and habitat management on this site for several Threatened species, including the Florida Scrub-Jay (FSJ; *Aphelocoma coerulescens*). FSJs, Florida's only endemic bird species, are non-migratory residents and defend all-purpose territories in scrub and scrubby flatwoods habitats that are maintained in their mid-successional stage by periodic fires every 5-20 years (Woolfenden and Fitzpatrick 1996). FSJs are cooperative breeders, living in social groups consisting of a breeding pair and usually one or more helpers (Woolfenden and Fitzpatrick 1984). They are opportunistic and

omnivorous, eating a wide array of arthropods, small vertebrates, berries, and acorns (Woolfenden and Fitzpatrick 1996).

On 29 April 2018, we watched four adult FSJs in a patch of scrub on the Bombing Range Ridge, a high sandy ridge running north-south through the center of APAFR. The scrub is characterized by evergreen shrubs with sparsely scattered South Florida slash pine (*Pinus elliottii*) located on a dry sandy ridge (FNAI 2010). The shrub layer consists of myrtle oak (*Quercus myrtifolia*), sand live oak (*Q. geminata*), Chapman's oak (*Q. chapmanii*), saw palmetto (*Serenoa repens*), and scrub palmetto (*Sabal etonia*) with scattered young sand pines (*P. clausa*). This layer forms a dense cover, 1.0-3.0 m tall, interspersed with patchy openings of bare sand and sparse herbs. The habitat is bisected by a crushed shell road with wide (10.0 m), regularly mowed, grassy shoulders with a drainage ditch (0.5 m deep) on either side. The ditch remains moist during the rainy season and a thin layer of detritus has built up from grass clippings and debris runoff. We observed the jays taking turns foraging in the grassy shoulder between the road and the scrub. One of the helpers picked up a food item, broke a piece off, ate it, and dropped the rest. Upon inspection of the item that was dropped, we found a decapitated Florida ivory millipede. Within ten minutes the second helper and the breeding male performed the same action. Each time we confirmed that they were indeed decapitating and eating only the heads of the millipedes. Numerous decapitated and bleached out exoskeletons of the millipedes were found scattered throughout the grassy ditch. Although the well-drained sandy soils of the scrub may not be ideal habitat for the Florida ivory millipede, the moister drainage ditch in the grassy shoulder along the road may be the reason why they are present.

Because spirobolid millipedes do not have secretion glands near the head, a quick decapitation would likely prevent the glands from emitting and the millipedes would not have time to coil their bodies in defense, reducing the chance that the head is protected by secretions.

The few known predators of spirobolids have specialized modes of attack, including coatis' (*Nasua* spp.) practice of rolling the millipedes in dirt to remove external secretions (Weldon et al. 2006), decapitation and dismemberment by dung beetles (*Deltochilum valgum*; Larsen et al. 2009), and immobilization with toxic injection by assassin bugs (Ectrichodiinae spp.; Forthman and Weirauch 2012). Eisner et al. (1998) found that the larvae of the glowworm beetle *Phengodes laticollis* are able to incapacitate spirobolid millipedes by injecting a paralytic fluid near the head, then retreating underground until the defensive chemicals secreted by the millipede have dissipated. The larvae then can consume the bulk of the inner tissues while avoiding the chemical-laden glands. Eisner (2003) observed a different approach by an unknown predator in New York state, where he found a number of decapitated *Narceus annularis*, a species found throughout the eastern United States and Canada (Keeton 1960, Eisner 2003). This species is in the same family, Spirobolidae, as the Florida ivory millipede and emits the same chemical secretions (Blum 1981, Shear 2015). The predator was consuming only the head of the millipedes and leaving the glandular-lined bodies untouched. Eisner surmised that this predator may be a rodent. He designed an experiment in which he offered *N. annularis* millipedes to mice and shrews, but each were repelled by the chemical secretion discharged by the threatened millipede. Eisner was not able to conclude what type of predator was circumventing the chemical defenses of the millipedes by consuming only the heads.

If FSJs decapitate and eat the heads of millipedes to avoid the noxious chemicals then other birds may do this as well, offering a clue to Eisner's (2003) mystery predator. Provided the decapitation prevents emission of chemicals, the glands would still be full and may be further reason the jays avoid consuming the bodies. This avoidance could have been learned from observing more experienced jays prey on the millipedes, or from experiencing the negative effects of the chemicals themselves.

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Literature Cited

Attygalle, A. B., S. C. Xu, J. Meinwald, and T. Eisner. 1993. Defensive secretion of the millipede *Floridobolus penneri*. Journal of Natural Products 56:1700-1706.

Blum, M. S. 1981. Chemical Defenses of Arthropods. Academic Press, New York, New York.

Eisner, T. 1970. Chemical defenses against predation in arthropods. Pages 157-217 *in* Chemical Ecology (E. Sondheimer and J. B. Simeone, Eds.). Academic Press, New York, New York.

Eisner, T. 2003. For Love of Insects. Harvard University Press, Cambridge, Massachusetts.

Eisner, T., M. Eisner, A. B. Attygalle, M. Deyrup, and J. Meinwald. 1998. Rendering the inedible edible: Circumvention of a millipede's chemical defense by a predaceous beetle larva (Phengodidae). Proceedings of the National Academy of Sciences 95:1108-1113.

FNAI [Florida Natural Areas Inventory]. 2010. Guide to the Natural Communities of Florida. Scrub. <www.fnai.org/PDF/FNAI-Natural-Community-Classification-Guide-2010_20150218.pdf>. Accessed 19 June 2018.

Forthman, M., and C. Weirauch. 2012. Toxic associations: A review of the predatory behaviors of millipede assassin bugs (Hemiptera: Reduviidae: Etrichodiinae). European Journal of Entomology 109:147-153.

Hopkins, S. P., and H. J. Read. 1992. The Biology of Millipedes. Oxford University Press, New York, New York.

Keeton, W. T. 1960. A taxonomic study of the milliped family Spirobolidae (Diplopoda: Spirobolida). Memoirs of the American Entomological Society 17:1-146.

Larsen, T. H., A. Lopera, A. Forsyth, and F. Génier. 2009. From coprophagy to predation: A dung beetle that kills millipedes. Biology Letters 5:152-155.

Shear, W. A. 2015. The chemical defenses of millipedes (Diplopoda): Biochemistry, physiology and ecology. Biochemical Systematics and Ecology 61:78-117.

Shelley, R. M. 1999. Centipedes and Millipedes, with Emphasis on North America Fauna. The Kansas School Naturalist Vol. 45 No. 3. Emporia State University, Emporia, Kansas.

Weldon, P. J., C. F. Cranmore, and J. A. Chatfield. 2006. Prey-rolling behavior of coatis (*Nasua* spp.) is elicited by benzoquinones from millipedes. Naturwissenchaften 93:14-16.

Woolfenden, G. E., and J. W. Fitzpatrick 1984. The Florida Scrub Jay: Demography of a Cooperative-breeding Bird. Princeton University Press, New Jersey.

Woolfenden, G. E., and J. W. Fitzpatrick 1996. Florida Scrub-Jay (*Aphelocoma coerulescens*). *In* The Birds of North America, No. 228 (A. Poole and F. Gill, Eds.). The Academy of Natural Sciences, Philadelphia and The American Ornithologists' Union, Washington, D.C.

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ABSTRACTS OF STUDENT PRESENTATIONS AND POSTERS AT THE FALL 2018 MEETING OF THE FLORIDA ORNITHOLOGICAL SOCIETY

3 November 2018
Florida Atlantic University
Davie Campus, Davie, Florida

The Fall 2018 meeting of the Florida Ornithological Society featured a great diversity of oral presentations and posters prepared primarily by students associated with Florida universities. Many of the presentations will likely lead to full-length articles in the near future, but the Abstracts submitted by participants are provided here for members of the Florida Ornithological Society who could not attend the meeting and also to serve as a record the breadth of research underway by the next generation of Florida scientists.

The oral presentations and posters provided by students were organized by Peter Monte (Department of Wildlife Ecology and Conservation, University of Florida). Thanks to Peter for all his hard work. Thanks also to Rindy Anderson, Department of Biological Sciences, Florida Atlantic University, for serving as the local meeting organizer. The Abstracts are listed alphabetically based on the last name of the presenter (who is also listed as the email contact). All authors' affiliated institutions are in Florida unless otherwise noted.

Homeward bound: Canopy cover and species identity influence winter homing success and speed in forest birds

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Efficient and safe movement is fundamental for wild birds to thrive in the environments where they live. For arboreal forest animals, especially birds, canopy cover has a large impact on daily movements and is an important component of conservation strategies seeking to retain wildlife in disturbed or urban habitats. We translocated

woodland bird of several species utilizing different forest strata during two non-breeding seasons to test their propensity for homing behavior and to examine the effects of canopy cover on homing success and speed. We found that bird species from the family Paridae (chickadees and titmice) were more likely to return to their home territories in winter than Northern Cardinals (*Cardinalis cardinalis*), indicating that species biology could determine strong site fidelity during the non-breeding season. Return speed following translocation was significantly affected by species, canopy cover, and release time. Parids returned faster in landscapes with higher canopy cover. This study is a systematic documentation of strong winter site fidelity and homing in common feeder bird species in North America and provides further evidence that animal movements in the suburban land cover may be constrained by vegetation configuration.

Feeding on the edge: Foraging White Ibis (*Eudocimus albus*) target inter-habitat prey movements

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The mechanisms of prey production and concentration are crucial biological processes affected by hydrology and landscape features in wetlands. These processes also affect prey exploitation by wading birds. Fish and crayfish prey move down slope within and across wetland habitats as water recedes over the dry season, concentrating prey in optimal foraging patches. Where and how predators exploit concentrating prey depends on movement of prey, predator foraging mode, and water depths. The most abundant nesting wading bird in the Florida Everglades, the White Ibis (*Eudocimus albus*), is a tactile forager that feeds extensively on crayfish. Literature suggests that White Ibis forage in 5-28 cm of water, but observations indicate that crayfish can concentrate at greater depths. We conducted an observational study of White Ibis foraging and crayfish density in drying sloughs to examine this predator-prey interaction. The study took place February-April 2017 in three wetlands at the Loxahatchee Impoundment Landscape Assessment facility in Boynton Beach, Florida. We used time-lapse

imagery to quantify mean White Ibis densities over ~0.16 ha of slough (with adjacent higher elevation ridges) over 61 days. Crayfish densities in the sloughs rose as crayfish moved off drying ridges (4-10 cm). Approximately 60-80% of White Ibis foraging occurred in deep sloughs (30 cm) during the dry down. White Ibis spatial distributions on peak foraging days favored the slough edge (10-12% of a given slough area) with 73-100% of daily foraging birds. Our observations suggest that White Ibis exploit crayfish on the slough edge when most of the slough is too deep for foraging.

An evaluation of productivity and dispersal for Burrowing Owls (*Athene cunicularia*) on the Boca Raton campus of Florida Atlantic University

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A population of the threatened Burrowing Owl (*Athene cunicularia*) lives on the Boca Raton campus of Florida Atlantic University (FAU). The FAU owls use a variety of burrows that vary in their exposure to humans. Detailed information on annual productivity as well as dispersal ranges of mature owls is lacking. This research focused on the dispersal ranges of individuals on the FAU campus and whether fledging rates were similar to those observed by McKie from 1990-2003. We hypothesize that the dispersal range of the burrowing owls should fall be within 2 miles of the natal burrow. We also estimate that the fledging rates will remain similar to those of the 1990's (~80%) even with the decrease in the number of owls. We performed a minimum of 30-minute observations at each burrow site to record activity, quantity, productivity, and dispersal from Fall 2017 to present. Burrowing Owls selected open grassy areas with low vegetation for their burrows. FAU owls also exhibited reproductive trends similar to previous years and demonstrated a low reproduction rate with high fledging rates throughout the year. The FAU campus supported an average of 16 owls during the study with 6 chicks hatched during the breeding period. Only a single chick disappeared before reaching maturity, yielding an 83% fledging success rate. To track individual owls more accurately, we plan to band FAU owls working with the Florida Fish and Wildlife Conservation Commission.

Do Bachman's Sparrows (*Peucaea aestivalis*) match songs with neighbors?

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Most passerine songbirds sing multiple song types ("song repertoires") and usually share some song types with other birds in their population. A bird's song repertoire may contain information about its ability to hold a territory and learn new song types, as well as its overall quality as a mate. During agonistic interactions, male songbirds use their song repertoires and other signaling behaviors to communicate their motivations and intentions. One of these communication signals is known as song-type matching, whereby a male replies to the song of another male with the same song type. Song-type matching has been shown to contain information about a singer's motivation to escalate an aggressive interaction if the rival does not back down or retreat. We tested hypotheses about song-type matching in Bachman's Sparrow (*Peucaea aestivalis*). Male Bachman's Sparrows have large song-type repertoires (45-55 song types) and share song types with territorial neighbors. During the 2018 breeding season, we documented natural bouts of counter-singing between neighbors by placing automated recorders at the territorial boundary between two males. We quantified the song-type matching to determine whether matching occurred at levels greater than those expected by chance. Chance matching rates are low in species with large song repertoires. In combination with results from a field playback experiment, our working hypothesis is that song matching is a signaling behavior that functions between established neighbors and is rarely used during interactions with stranger males. Analyses are ongoing, but to date, male sparrows had higher song rates and type-matching occurrences during playbacks than compared to natural recordings with neighbors. Although our data suggest males type match more frequently during playback experiments, further study is needed to examine whether males type match in an agonistic context during simulated territorial intrusions by neighbors.

Wading-bird use of damaged and intact mangrove habitats following Hurricane Irma

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The coastal avifauna of subtropical regions has evolved within an active tropical storm regime. This study evaluated the impacts of Hurricane Irma on wading birds that forage in mangrove habitats in southwestern Florida. Our study site was Rookery Bay (Collier County) and focused on species of the genus *Egretta* that have experienced declines in Rookery Bay in recent decades (Snowy Egret [*E. thula*], Little Blue Heron [*E. caerulea*], and Tricolored Heron [*E. tricolor*]). We also studied Great Egrets (*Ardea alba*) because this species has served as an indicator species at Rookery Bay in the past. Our objectives were to compare wading bird abundance and foraging activity in the Rookery Bay National Estuarine Reserve and the Ten Thousand Islands National Wildlife Refuge to evaluate how wading birds utilized the mangrove habitats. These areas were selected because the Ten Thousand Islands showed a noticeable loss of mangrove habitat after Hurricane Irma compared to Rookery Bay. Data collection took place from June 10 to August 10, 2018. Focal wading birds were counted along a transect within each study site, along with whether they were foraging or roosting, their GPS coordinates, water depth if applicable, and the approximate damage, canopy cover and tree height taken from the mangroves the wading birds were utilizing. Initial insights about how wading bird populations fared a year after the storm will be discussed.

Nesting White Ibis (*Eudocimus albus*) prey composition at coastal colonies in Everglades National Park

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Prior to extensive draining and compartmentalization of south Florida wetlands, most wading bird nesting activity occurred in

coastal colonies within the southern freshwater/estuarine ecotones of Everglades National Park (ENP). Wading-bird nesting dynamics in this formerly productive region are being used as an indicator of ecosystem restoration success. The White Ibis (*Eudocimus albus*) is the most abundant wading bird nesting in ENP. Previous diet studies in the central Everglades highlight the importance of crayfish and urban resources to ibis colony energetics. Yet, prey use in the remnant coastal colonies of the southern Everglades remains virtually unknown. We assessed prey composition of provisioned ibis chicks in coastal colonies within ENP in 2017 and 2018 through examination of regurgitated food boluses. Prey use varied significantly between years. In 2017, chick boluses were dominated by four genera of estuarine crabs (75.4% of biomass) with low crayfish use (14.6% of biomass). In 2018, prey use shifted from crabs (26.0% of biomass) toward crayfish and fish (45.0% and 27.7% of biomass, respectively). Nesting effort also varied between years, with 2017 considered average (1,206 peak nests) and 2018 supernormal (31,320 peak nests). Our results suggest that crayfish are important prey for White Ibis nesting in the southern Everglades, especially in years with high nesting effort, but other prey types may contribute to prey composition. Results from this study provide insight into the trophic relationships between White Ibis and their prey in a historically productive region of the Everglades.

Rate of receding water-level explains variation in nest abundance and survival for a searcher (Snowy Egret, *Egretta thula*), but not an exploiter (Great Egret, *Ardea alba*)

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Reduced prey availability is hypothesized to be a primary mechanism responsible for the decline of wading bird populations in south Florida and elsewhere. Populations of species that require high prey densities to reproduce (i.e., searchers) have declined in the region, whereas those that do not (i.e., exploiters) have increased. For six breeding seasons (2011-2013, 2015-2017), we measured nest abundance and daily nest-

survival rates (DSR) of a searcher, the Snowy Egret (*Egretta thula*; SNEG), and an exploiter, the Great Egret (*Ardea alba*; GREG), at Lake Okeechobee, Florida. We used a model-selection approach to examine the importance of hydrologic parameters on nest abundance and DSR. We predicted that the rate of receding water would be more important in explaining variance in nest abundance and DSR for SNEG than for GREG because water recession rates are correlated with the high prey densities on which searchers depend. Snowy Egret nest abundance and DSR increased with recession rate, though only when lake stage was high. Recession rate was the most important parameter in SNEG nest abundance and DSR models. GREG nest abundance peaked when lake water levels were moderately high and GREG DSR increased weakly with lake water levels. Recession rates did not influence GREG nest abundance or DSR. The high relative importance of recession rate for nest abundance and survival models for SNEG but not GREG were likely due to differences in their foraging ecology. We hypothesize that differences in foraging ecology are also linked to the opposing population trajectories of the two species.

Urban and natural wetland-nesting Wood Storks (*Mycteria americana*) differ in their response to hydrologic conditions: Dietary plasticity of a threatened species in response to human-induced landscape change

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Urbanization is one of the most drastic human alterations to ecosystems world-wide. In south Florida, Wood Storks (*Mycteria americana*) have declined due to human-induced landscape changes that have altered Everglades hydrologic conditions. Despite well-documented sensitivity of storks to human disturbance, storks often forage in artificially created wetlands and nest in urban environments. To assess how storks are responding to urbanization in south Florida, we examined the influence of colony location and hydrologic conditions on diet breadth, productivity, and body condition. Based on foraging theory, we expected diet breadth would increase during suboptimal hydrologic conditions, which is linked to low prey density. Furthermore, if urban storks have access to alternative food sources, we would expect them to have a greater diet breadth and productivity during

suboptimal conditions than storks in natural wetlands. We found that urban storks had greater diet breadth than natural wetland storks. Diet breadth of urban and natural wetland storks was greatest during suboptimal conditions. When conditions were optimal, urban and natural wetland storks exhibited decreased diet breadth. Similarly, productivity varied with hydrologic conditions and colony location. During suboptimal conditions, urban storks had greater productivity when compared to natural wetland storks. During optimal conditions, both urban and natural storks had high productivity with natural wetland nesting storks having the greatest productivity. Overall, body condition of nestlings did not differ significantly between natural and urban storks. However, body condition was significantly higher for all storks during optimal conditions. Overall, urban storks had greater diet breadth and productivity than natural wetland storks, suggesting that urban storks may be more resilient to hydrologic fluctuations than Everglades nesting storks. The increased diet breadth of urban storks may be due to proximity of alternative food sources associated with artificially created wetlands and urban refuse that provide more predictable food sources when natural wetlands are suboptimal.

Importance of patch-specific data in assessing the risk of extinction for the Everglade Snail Kite (*Rostrhamus sociabilis plumbeus*), a federally endangered raptor

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The Everglade Snail Kite (*Rostrhamus sociabilis plumbeus*) lives year-round in a dynamic patchwork of wetlands in south Florida where it feeds predominantly on apple snails (*Pomacea* spp.). Despite decades of intensive species- and ecosystem recovery efforts, this population of the Snail Kite remains endangered, although its population size has increased recently concomitant with an invasion by a non-native apple snail, *Pomacea maculata*. Our study tested the hypothesis that the proliferation of *P. maculata* is contributing to a recovery of the kite population. We conducted a population viability analysis (PVA) for the entire population and for two subpopulations (northern wetlands vs.

southern wetlands) both before and after the invasion of *P. maculata*. Though the probability of extinction within 50 years remained at zero in all PVA models, the projected growth rate of the whole population was slightly lower in the invasion era (r = 0.001) compared to the pre-invasion era (r = 0.039). This suggests that *P. maculata* alone cannot sustain the recovery of the Everglade Snail Kite. However, the sub-population PVAs showed that the growth rate of Snail Kite sub-populations is most positive in the northern wetlands where *P. maculata* is most abundant, which suggests conditions in the declining southern sub-population were severe enough to mask positive effects of the new prey in the statewide analysis. We illustrate how the scale of analysis, even in a small, wide-ranging, oft-dispersing species, may have important consequences for endangered species management.

Exploratory behavior of reintroduced Brown-headed Nuthatches (*Sitta pusilla*)

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Reintroducing animals to habitats they once occupied has emerged as an important conservation strategy in the face of anthropogenic habitat loss and climate change. Despite widespread implementation, very few reintroduction efforts are deemed successful. Qualifying reintroductions as a success has focused primarily on census and demographic data with less consideration given to the potential role that behavior may play in reintroduction. Brown-headed Nuthatches (*Sitta pusilla*) were successfully reintroduced to restored pine rockland habitat in Everglades National Park in the early 2000s. Our objectives were to determine behavioral factors that may have been important to success of reintroduction efforts by comparing personality types in the reintroduced population (n = 18) with personality types in the original source population (n = 17) used for the reintroduction and another nuthatch population in north Florida (n = 17). We placed birds in an exploratory chamber and observed each bird for 10 minutes, quantifying how quickly or slowly they explored a novel environment. We found that reintroduced nuthatches in the Everglades exhibited

slower exploratory tendencies compared to the other populations assessed. These results could help to inform future reintroduction efforts for nuthatches and other species.

A collaborative approach to monitoring regional dispersal dynamics of Black Skimmers (*Rynchops niger*) in southwest Florida

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Monitoring seabirds is a valuable approach to gauge the ecological integrity of Florida's coastline. For example, the colonial-breeding Black Skimmer (*Rynchops niger*) is a conservation priority throughout Florida owing largely to the threats associated with intensive development of beaches where it breeds. Many gaps exist in surveying the expansive southwest coastline of Florida where large breeding skimmer colonies exist, especially during fall and winter after colonies have disbanded. The objective of this study was to fill in knowledge gaps by documenting movements of individually marked skimmers after they fledged from breeding colonies. Our focus was tracking regional skimmer distributions across widely scattered areas in Collier, Lee and Charlotte counties, building on banding efforts in Pinellas County (since 2015) and Collier County (since 2017). Using a combination of complementary techniques, we augmented survey effort in terms of spatial and temporal coverage. The use of multiple approaches was accomplished with help from undergraduate student researchers who were conducting their Senior Research projects focused on various aspects of the study. Techniques employed included traditional band re-sighting, targeted surveys in likely areas of skimmer congregation, concerted scouting in under-covered areas, and manual and automated radio-tracking of chicks outfitted with VHF nanotags. In July-August 2017 and 2018, banding and nano-tagging of ~3-week old chicks occurred at St. Pete Beach and Indian Shores (Pinellas County) and Tigertail Beach on Marco Island (Collier County). Since summer 2018, monitoring efforts have included rotating weekly

surveys among over a dozen sites, spanning south to north from the 10,000 Islands to St. Pete Beach. We will provide highlights of our preliminary observations, and monitoring will continue this fall and winter. Ultimately this study will augment knowledge about regional movement patterns of Black Skimmers to facilitate conservation planning. It also demonstrates the efficacy and value of collaborative research with university students.

Foraging behavior of provisioning Roseate Spoonbills (*Platalea ajaja*) in Florida Bay

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Roseate Spoonbills (*Platalea ajaja*) breeding in Florida Bay forage in Everglades National Park's coastal dwarf mangrove habitats. Due to foraging habitat degradation elsewhere in south Florida, their nesting colony range has increased throughout the Bay since 1936 as spoonbills found new foraging habitats. In 2006, Roseate Spoonbills began nesting in large numbers in Madeira Hammock in inland Everglades National Park. In this study, ten Roseate Spoonbills breeding in Florida Bay will be satellite tagged and tracked for one breeding season. A fishnet analysis will determine foraging habitats from this study and from a previous satellite study conducted from 2005 to 2007. Foraging habitats and foraging behavior, including foraging flight distance and duration will be compared. Results from the 2005 to 2007 study showed Roseate Spoonbills flying an average of 12 km between nesting colony and foraging sites with a maximum flight distance of 65 km. Primary foraging sites during those years were located north of Florida Bay from Taylor Slough to Turkey Point. We expect to see a relationship between these foraging behaviors and water levels. Roseate Spoonbills are tactile feeders and require a high concentration of fish to forage successfully. If primary foraging habitats do not dry down to a water level below 13 cm, spoonbills may be forced to forage elsewhere resulting in increases in foraging distance and duration.

How vigilance behavior of Burrowing Owls (*Athene cunicularia*) is influenced by human development

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Research about the natural and life history of the Burrowing Owl (*Athene cunicularia*) is imperative to inform management decisions that will protect this threatened species in Florida. This study aims to augment the understanding of Burrowing Owl ecology by evaluating whether urban density influences the type and overall amount of vigilance behavior exhibited in a population in Cape Coral, in southwest Florida. Cape Coral has been and continues to be one of the fastest growing cities in Florida. We predicted there would be differences in the types of vigilance behavior displayed between owls in North Cape Coral and those in South Cape Coral because of different development intensities. A time-budget analysis was conducted to compare vigilance at owl burrows in dense versus less developed parts of the region. We studied three burrows located in North Cape Coral where human density was lower and three burrows located in South Cape Coral where human density was higher. Each site was observed on five days during Summer 2018; owl behavior was categorized every 15 seconds for a total of 20 minutes of observations at each burrow per day. Behaviors were recorded in categories of the most common types, including perching, preening, looking around, and looking up. The results show that burrowing owls in the North Cape spend more time looking towards the sky than burrowing owls in the South. This could suggest that owls in the South Cape are vigilant for different predators, such as domestic cats or dogs and vehicles, compared to those in the North. This relationship between the amount of urban density and vigilance behavior could have implications on future conservation management plans for this species.

Video-documentation of predators and nest defense at Bachman's Sparrow (*Peucaea aestivalis*) nests

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Nest predation is often a factor contributing to avian population declines, but its influence can vary with predator type and parental nest-defense behaviors. Successful management of declining bird populations, therefore, requires characterization of predator identity and nest-defense behaviors. We focus on predation patterns at nests of Bachman's Sparrow (*Peucaea aestivalis*), a species of conservation concern that is endemic to pine savannas of the southeastern United States and whose nesting ecology is insufficiently described. During 2015-2017, at two sites in northern Florida, we monitored 86 Bachman's Sparrow nests, 65 with constant video surveillance. We identified 12 predator species from 37 predation events. Snakes were the dominant predator type, responsible for 51% of identified predation events, followed by mesomammals (19%), small mammals (16%), and other species (14%). We observed six instances of nest defense behavior by parents. Nest defense behavior included ptiloerection and chasing, which was rare (16% of predation events) and effective 67% of the time. Daily nest survival was 0.936 (CI: 0.894-0.967) and neither season, year, nor site explained a significant amount of variation in estimates of cause-specific daily nest mortality. Raccoons were not detected at Bachman's Sparrow nests despite being one of the most common nest predators in other avian nest-surveillance studies. Given that pine savannas of the southeastern United States are fire-dominated, we suggest that the effects of fire on snake activity and foraging patterns in southeastern grasslands deserves further research.

Time and tide wait for no bird: Predicting Little Blue Heron (*Egretta caerulea*) habitat use in a dynamic intertidal system

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Wading birds are limited to foraging in water depths no deeper than their leg length (0-50 cm) and consequently tides restrict when and where they can feed. We identified factors affecting density of foraging Little Blue Herons (*Egretta caerulea*) in intertidal systems. We performed bi-weekly surveys by boat within Great White Heron National Wildlife Refuge, Florida Keys, from 2016-2018 to locate birds foraging in intertidal areas during the breeding season (February-July). We used these data to evaluate the predictive performance of an established model for Little Blue Heron density that evaluates the effects of shallow-water availability (SWA), spring-neap tidal cycle, diurnal activity, and ebb-flood tidal cycle. The model suggested good fit of the data (R^2 = 0.42) but over-predicted densities at low and high values. We then tested whether breeding activity was a predictor of foraging density when nestlings were present and one adult tended nestlings while the other adult gathered food. This formulation retained parameters from the established model and included a parameter for breeding activity (quadratic form) to predict density using Akaike's Information Criterion (AICc) model-selection approach. The top three competitive models based on delta AICc < 2 carried 67% of the weight and included parameters for breeding activity, diurnal activity, and spring-neap tidal cycle. There was a strong quadratic effect of breeding activity on density, indicating that foraging activity of Little Blue Herons is predominantly constrained by breeding activity with density in foraging habitat dropping during periods of incubation and chick-provisioning. The weak effect of shallow-water availability and ebb-flood tidal cycle suggested that their influence on Little Blue Heron density was suppressed during the breeding season when nesting pairs were under pressure to increase foraging activity.

Review of American Flamingo (*Phoenicopterus ruber*) natural history in Florida

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The American Flamingo (*Phoenicopterus ruber*) is an iconic Florida symbol used to promote tourism, lottery tickets, and other Florida oddities. For nearly a century, the status of this species in Florida has been controversial. Historical populations and long-term trends of flamingos have been misunderstood. Additionally, there has been uncertainty regarding historical breeding and whether nesting occurred, or whether current flamingo observations are wild or escapee birds. We aim to understand the historical status and long-term trends of the American Flamingo in Florida for management purposes. Early naturalist and museum records allowed us to compile historical information that described the historical abundance and distribution. Contemporary citizen science projects and rare-bird reports were also collected to look for recent trends. The records showed definitive evidence for large flamingo flocks (hundreds to thousands of individuals) present year-round in the 19th century. Historical flocks experienced heavy hunting pressures, and there is strong evidence that hunting led to extirpation of the historical population by 1900. From 1950 to 2015, citizen-science data showed increasing population trends, potentially indicating incipient recolonization of their historic range. Resolution of the status and origin of Florida's flamingos is a critical foundation for science-based management planning.

Spatial pattern of song sharing in Bachman's Sparrows (*Peucaea aestivalis*)

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Song sharing is common among male songbirds, but the extent of song sharing among individuals can vary depending on the geographical distance between territories. This variation is due to differences in dispersal distances combined with specific song-learning periods. Thus, comparing spatial patterns of song sharing allows us to infer song-learning strategies and dispersal behavior for even the rarest or most secretive species. The extent of song learning and dispersal are unknown for the rare Bachman's Sparrow (*Peucaea aestivalis*), most likely because it spends much of its life hidden in the understory of pine flatwoods and prairies. Our objective was to compare the number of songs shared among male Bachman's Sparrows to understand broad patterns of song development and dispersal. From 2016 to 2018, we recorded adult male sparrows using targeted recording and long-term acoustic recorders, and we marked their locations. We determined their repertoires using a program developed in *Matlab* and compared repertoires between males by visually comparing song spectrograms. Song sharing is greater at closer distances, especially for neighbors, and then declines at greater distances. These data suggest that Bachman's Sparrows may be age-restricted learners, and that they attempt short dispersal distances but will disperse farther if suitable territories are not available. By understanding how these imperiled songbirds disperse, we can make better decisions about conserving their populations.

Comparison of monitoring approaches for avian communities in freshwater wetlands: Bio-acoustic versus conventional point-count methods

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Wetlands are known for their high levels of biodiversity and biological productivity. They provide important functions and ecosystem services that include productivity, biodiversity support, nutrient cycling, and floodwater storage. Birds may be affected by all four types of ecosystem services. Monitoring of bird distribution and abundance, in turn, can detect changes in relation to ecosystem functions as well as more specific features such as habitat availability and surrounding land uses. In this research, my goal is to compare the accuracy of three monitoring approaches in common use today for surveying wetland bird communities. I will deploy a variety of Acoustic Diversity Indicators (ADIs) to assess whether data collected using these devices are correlated with bird community richness and health. After assessing three distinct methods (alone and in combination), I will develop an adaptive monitoring protocol for wetland avian diversity and community functions using optimal combinations of techniques.

Partial migration and seasonal distribution patterns in Wood Storks (*Mycteria americana*)

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Wood Storks (*Mycteria americana*) are federally threatened wading birds in the southeastern U.S., historically nesting mainly in the Florida Everglades. High mobility is a key feature that allows wading birds to exploit resources whose distributions are both spatio-temporally heterogeneous and unpredictable. Patterns of Wood Stork large-scale migratory movements are likely to reflect spatiotemporal dynamics of resource availability across their range but have never been described in detail. The objective of this study was to provide

the first quantitative, individual-based description of Wood Stork migratory patterns and seasonal distribution. Using GPS tracking data for 64 individuals tracked between 2004 and 2017, we found that the Wood Stork population was partially migratory, with 59% of individuals seasonally commuting between winter ranges in Florida and summer ranges elsewhere in the population range (migrants), and 28% remaining in a single area in Florida year-round (residents). Additionally, 13% of storks act as opportunistic migrants, migrating in some years but not in others. Partial migration is likely an adaptation to high heterogeneity and unpredictability of food resources. Comparing the distribution of residents and migrants suggests that different migratory strategies might be associated with the use of different or differently distributed resources, possibly including food supplementation from human activities. The existence of opportunistic migrants shows the potential for plastic change of migratory patterns on top of adaptation. Our future research focuses on the fitness implications of migratory behavior, to improve our understanding of the ecological and evolutionary drivers of partial migration.

Variation in parid call production during mobbing events in Florida

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In various ecosystems, mobbing continues to be a significant anti-predator mechanism utilized by prey against predators. In forests of the eastern U.S., Tufted Titmice (*Baeolophus bicolor*) and Carolina Chickadees (*Poecile carolinensis*) act as nuclear species, possibly using their sociability and aggression to aid their success in predator mobbing. Parid mobbing calls can vary in complexity, though the cause of this variation is still unknown. Thus, this investigation examined potential causes for these changes. In multiple plots within three distinct sites in Florida, audio recordings were made during mobbing aggregations created by a playback of an Eastern Screech Owl (*Megascops asio*). The parid calls were marked and counted on each of the recordings, while the number of heterospecifics and core species (Tufted Titmice, Carolina Chickadees, Downy Woodpeckers [*Picoides pubescens*], and

White-breasted Nuthatches [*Sitta carolinensis*]) present were noted. The findings suggest a positive relationship between the presence of the core species and the parid call count, as well as a positive relationship between the number of parids present and the parid call count. The number of heterospecifics present does not appear to influence the parid call count substantially. The findings also suggest that the threat of detection also influences call production. Therefore, the presence and number of Downy Woodpeckers, White-breasted Nuthatches and parids in mobs as well as the threat of detection may influence the complexity of parid mobbing calls.

Composition of disturbance factors at a Black Skimmer (*Rynchops niger*) colony in southwestern Florida

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This study evaluates the relative impact of disturbance factors on two Black Skimmer colonies at Tigertail Beach on Marco Island, Collier County, Florida. The Black Skimmer (*Rynchops niger*) is a seabird in the family Laridae that forages on small fish and crustaceans by skimming the water's surface with its signature asymmetric bill. Habitat loss due to beach erosion and development has contributed to population decline of this state threatened, beach-nesting species, and growing outdoor recreation and Fish Crow (*Corvus ossifragus*) predation are other potential sources of disturbance. Disturbance can be defined as any action that disrupts the breeding cycle, foraging behaviors, or resting of shorebirds. Actions that disrupt breeding behaviors have been shown to cause egg- and chick mortality in skimmers, yet no known previous research has evaluated disturbance behavior in Florida's breeding populations. During the 2017 breeding season, we monitored skimmer responses to disturbances at this site that has consistently supported one of the largest colonies of breeding Black Skimmers and Least Terns (*Sternula antillarum*) in Florida. Our objective was to quantify the composition of disturbances affecting the colony and to determine which sources caused the highest frequency and intensity of behavioral responses. The two colonies were observed for a minimum of two days/week from the onset of courting until chicks fledged. We noted all sources of activity that elicited vocal or flushing responses from the breeding birds. Response variables included the approximate

percentage of adults participating in disturbance behavior and the amount of time spent performing displays. Preliminary comparison of the sources of activity indicates that human-caused versus other sources of disturbance, such as the presence of predators, were equally frequent. Our data about the types, relative frequency, and intensity of different disturbances will provide insights for conservation and public education purposes at the Tigertail colony, along with related management and regulatory purposes with implications for seabird colonies throughout Florida.

Linking territory characteristics to behavioral syndromes in Bachman's Sparrow (*Peucaea aestivalis*)

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Behavioral syndromes are suites of correlated behaviors expressed by individual animals within or across behavioral contexts. For example, individuals that are more aggressive when confronting rivals are often bolder when confronting novel objects. Because behavioral syndromes can predict how individuals respond to environmental stimuli (e.g., food shortage, increased predation threat), habitat-management strategies may favor individuals with certain behavioral syndromes, thus affecting how the population responds to the management practices. We tested for a behavioral syndrome linking aggression and boldness in male Bachman's Sparrows (*Peucaea aestivalis*) and asked whether these traits correlated with aspects of territory quality. We predicted that 1) males that were more aggressive in response to rivals would also be bolder when approached by a human, and 2) aggression/boldness would show a positive relationship with territory quality. We studied male sparrows breeding in Jonathan Dickinson State Park, Florida, from March-July in 2018. For each male we measured boldness (flight initiation distance) and aggressiveness (simulated territorial intrusion using song playback and a sparrow decoy) to test for positive association between these traits. We also mapped each male's territory and estimated territory size, percent wetland cover, basal area of woody material, time since last fire, and the density and height of vegetation. Our analysis uses generalized linear models to describe the relationship between behavioral traits (boldness and aggression) and territory characteristics. Our results will add to

an understanding of how behavioral traits and their resulting social dynamics shape individual space use in a population, with future research directed at incorporating this relationship into population modeling and conservation management strategies.

Conserving suburban Burrowing Owls (*Athene cunicularia*) by engaging residents

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Burrowing Owls (*Athene cunicularia*) on Marco Island (Collier County) are integrated with the community and can be found nesting on vacant lots in almost every neighborhood. Though their population currently numbers around 190 pairs, they are threatened by habitat loss as vacant lots are developed into new homes. To address future concerns about Marco Island's Burrowing Owls, we implemented two community-based conservation programs. *Owl Watch* is a citizen-science project in which volunteers monitor Burrowing Owl nests throughout the nesting season. In 2018, 46 residents participated in *Owl Watch*, and conducted a total of 4,500 10-minute observations of 193 pairs of Burrowing Owls, contributing 760 hours of service. Productivity estimates from *Owl Watch* data were not significantly different from productivity determined by professional researchers. *Owl Watch* citizen scientists provided an effective way of collecting data over greater space and time than a single researcher, and we plan to continue *Owl Watch* to track any potential population changes over time. A second conservation program associated with *Owl Watch* encouraged landowners to install starter burrows on their property with the intention of attracting Burrowing Owls. In 2018, forty-one landowners participated and allowed us to dig one or more starter burrows on their property. Of the 50 starter burrows dug, ten had evidence of Burrowing Owls digging, five were excavated by owls into full burrows and used as accessory burrows, and two were used as nests. Additional study is necessary, but starter burrows may have potential to provide additional nesting habitat to Burrowing Owls as vacant lots containing existing burrows are developed.

White Ibises (*Eudocimus albus*) as urban adapters in south Florida

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Novel anthropogenic food resources can alter species' ecology, health, and behavior. The White Ibis (*Eudocimus albus*) is a great model species to study recent urban adaptation, as a portion of the south Florida population has recently shifted from a wetland specialist to a generalist within the last two decades. Ibises in Florida are commonly observed in urban areas where they forage on lawns, landfills, and golf courses, and are also hand-fed in urban parks. We have been studying the effects of this recent urbanization on White Ibises since 2009, hypothesizing that ibises were spending more time in urban areas than in natural areas, showing higher site fidelity to urban parks and zoos where food handouts were abundant, and questioning the effects the shift in behavior had on their health (e.g., body condition, ectoparasite burdens, stress, immunity, and pathogen prevalence) where they consume largely carbohydrate-rich and protein-poor diets. From 2015 to 2017, we captured ibises both within the urban landscape and natural wetlands, collected biological samples, and attached GPS transmitters to a subset of adults. Our results suggest that ibises in urban areas showed higher site fidelity throughout the non-breeding season and were heavily provisioned with anthropogenic food, which appeared to offer a trade-off by providing low-quality, but easily accessible calories that may not support high mass but may increase time available for behaviors such as preening that decrease ectoparasites. Furthermore, urban ibises are more likely to be chronically stressed and to have a higher parasite (*Salmonella*) prevalence than birds captured at natural sites. Parasite prevalence was also positively associated with fidelity to sites from which we had isolated *Salmonella* spp. Understanding the trade-offs ibis face is important for future conservation and management of birds in human-modified habitats.

Habitat use, range size, and residency times of an American Flamingo (*Phoenicopterus ruber*) in Florida Bay

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American Flamingos (*Phoenicopterus ruber*) are among the rarest and most iconic of Florida's birds. Flamingos were nearly extirpated from south Florida by ~1900, but flamingo observations have been increasing since the 1950s, likely as increasing numbers of birds arrive in Florida from growing breeding populations in the Caribbean. To date, no detailed ecological studies of Florida's flamingos have been conducted and exact geographic origins of flamingos in Florida remain unclear. In 2015, we captured, banded, and placed a satellite transmitter on a juvenile male American Flamingo (band US01, hereafter "Conchy"). Here, we report satellite telemetry results from over a two-year period in an effort to evaluate geographic origins, habitat use, range size, and residency times of flamingos in Florida. Between November 2015 and October 2017, Conchy used a range of mud flats, mud banks, and lagoons within Florida Bay. Conchy resided largely within the confines of Everglades National Park for a period of two years–ultimately providing no information on a connection between Florida's flamingos and populations elsewhere in the Caribbean. Conchy was reported in multiple instances through the *eBird* citizen-science project, providing valuable information on detection probability for putatively conspicuous birds. Although our data and observations are all generated from a single individual bird, they provide useful information on basic biology of one of Florida's most charismatic bird species.

Testing hypotheses about song-type matching and song sequences in Bachman's Sparrow (*Peucaea aestivalis*) vocal repertoires

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To extract meaning from a communication signal, animals must understand both the context of the communication (e.g., intrasexual competition or courtship) as well as how an individual's vocal units are organized and delivered. In this project we aim to understand how Bachman's Sparrows (*Peucaea aestivalis*) structure the delivery of their large *primary* song type repertoires (> 45 song types) and the potential role that song delivery patterns play in intraspecific vocal interactions. In a field study we presented male Bachman's Sparrows with simulated territorial intrusions and each subject received two song playback treatments: 1) songs played in the sequence in which the subject bird sang them during a natural bout of undisturbed broadcast singing (ABCDE), and 2) songs played in a jumbled order (e.g., CEADB). We compared responses to the two playback treatments and found no differences in song type matching, song rate, song type switching frequency, or aggressive behaviors. While there was a low incidence of song type matching during both treatments, subjects tended to match song type to the playback more frequently when songs were presented in the birds' own sequence (the song sequence produced during undisturbed broadcast singing) compared to songs played in a jumbled sequence. In ongoing analyses, we are using Markov models to test for predictable song delivery patterns in individual Bachman's Sparrows during undisturbed singing, in response to simulated territorial intrusion, and during natural counter-singing interactions between neighbors. We will also test whether neighbor dyads, which tend to share song types in common, also share song sequences in common. Ultimately, we seek to understand the role that vocal unit sequences may play in agonistic communication.

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FIELD OBSERVATIONS

Spring Report: March-May 2019.—This report consists of significant bird observations compiled by the Field Observations Committee (FOC). Electronic submissions to the FOC should be in the following format: species, number of individuals, age and sex of the bird(s), color morph if applicable, location (including county), date, observer(s), and significance. Seasons are winter (December-February), spring (March-May), summer (June-July), and fall (August-November). Submit observations to regional compilers within two weeks after the close of each season, or to the state compiler within one month. Addresses of the compilers follow this report.

Sight-only observations are considered "reports" while only those observations supported by verifiable evidence (photographs, video or audio recordings, or specimens) are called "records." Species for which documentation is required by the FOC and by the FOS Records Committee (FOSRC; <fosbirds.org/official-florida-state-bird-list>) are marked here with an asterisk (*). A county designation (in italics) accompanies the first-time listing of each site in this report. Abbreviations in this report are: AFB = Air Force Base, AFR = Air Force Range, CA = Conservation Area, EOS = end of season, m. obs. = many observers, NERR = National Estuarine Research Reserve, NP = National Park, NSRA = North Shore Restoration Area, NWR = National Wildlife Refuge, SF = State Forest, SP = State Park, STA = Stormwater Treatment Area, STF = sewage treatment facility, WMA=Wildlife Management Area, and N, S, E, W etc., for compass directions. Bold-faced entries denote birds newly reported or verified in Florida, or record numbers. +Photographs or video- or audio-recordings archived by the FOC are identified by a plus (+).

Summary of the Spring Season

State review species in this report include individual Least Grebes in two different *Palm Beach* locations, an Inca Dove, two Key West Quail-Doves including one as far north as *Volusia*, continuing Vaux's Swifts in Gainesville, a California Gull, one Manx Shearwater, one Neotropic Cormorant, a Golden Eagle, three LaSagra's Flycatchers, two Thick-billed Vireos, one Bewick's Wren, a Red-legged Thrush at Lantana Nature Preserve, four different Bahama Mockingbirds, a Sprague's Pipit at Apalachicola, one Kirtland's Warbler, a Western Spindalis, two Bananaquits, one Black-faced Grassquit, and one Spotted Towhee.

Species Accounts

Black-bellied Whistling-Duck: 5 at Eastman/Taminco Sanctuary (*Santa Rosa*) 5 Mar (L. Kelly, L. Goodman, B. Furlow); 2 at Lake Jackson (*Leon*) 23 April (J. Cavanagh); 2 at Highway 146 (*Jefferson*) 27 May (M. Smith, R. Emond, A. Smith, P. Smith).

Fulvous Whistling-Duck: Up to 2 at Sweetwater Wetlands Park (*Alachua*) 23 Mar-13 Apr (A. Whitlock, D. Fulton et al.); 4 at Fellsmere WMA (*Indian River*) 1-16 Apr (G. DelPizzo); 8 at Big Lagoon SP (*Escambia*) 4 Apr (L. Dillon); 6 at T. M. Goodwin WMA (*Brevard*) 9 May (R. James).

Snow Goose: 1 at Molino (*Escambia*) 1 May (J. Yuhasz).

Canada Goose: 2 adults with 6-7 non-flighted young in Archer constituted a first breeding record for *Alachua* (B. Woodmansee).

Egyptian Goose: 1 at Gainesville (*Alachua*) 1 Apr (S. Wade, J. Hartfelder).

American Wigeon: 2 at Alligator Point (*Franklin*) 21 Mar (J. Murphy).

Mottled Duck: 1 at Lake Apopka North Shore (*Lake*) 1-16 Mar (m. obs.); 2 at Journey Circle M Ranch (*Lake*) 4 Mar (G. DelPizzo); 2 at Fenney Nature Trail (*Lake*) 31 Mar (+A. Horst); 7 (2 adults, 5 juvenile) at Wiechens Preserve (*Lake*) 9 Apr (C. Robert); 2 at Katie's Landing (*Lake*) 13-21 May (D. Richard).

Cinnamon Teal: 1 male at Pine Glades Natural Area (*Palm Beach*) 13 Apr (J. Rager).

Northern Shoveler: 3 at Alligator Point 21 Mar (J. Murphy); 1 male/1 female at Lake Apopka Wildlife Drive (*Orange*) 14 Apr (L. Custer); 2 males/1 female at Lake Apopka Wildlife Drive 11 May (+J. Mileyka).

Ring-necked Duck: 1 at Lake Apopka Wildlife Drive 25-26 May (J. Mileyka).

Lesser Scaup: 2 at Lake Apopka Wildlife Drive 23 May (K. Hamblett).

Common Eider: 1 at Ponce Inlet (*Volusia*) 1-26 Mar, 8-24 May (m. obs.); 2 at Bennett Causeway/Banana River Bridge (*Brevard*) 1 Mar (m. obs.); 1 male at 160 North Causeway (*Volusia*) 16 Mar and 22 May (+F. Jones).

Surf Scoter: 1 at Huguenot Memorial Park (*Duval*) 6 Mar and up to 6 there 15 Mar (L. Kavanaugh *fide* K. Dailey); 1 at Port Orange Causeway Park (*Volusia*) 7 Mar (m. obs.); 1 at Gulf Breeze (*Santa Rosa*) 23 Apr-3 May (B. Duncan); 1 at Fort De Soto Park (*Pinellas*) 24 May (+J. Ficken); 1 in Halifax River (*Volusia*) 25 May (Z. Rauscher); 1 male at Ponce Inlet 31 May (+M. Brothers).

White-winged Scoter: 1 at Scottsmoor Landing (*Brevard*) 1 Mar (A. Whitlock); 3 offshore at Turtle Mounds (*Volusia*) 11 Mar (+T. Lee); 11 offshore at East Sandpiper Road (*Indian River*) 20 Mar (C. Newton); 1 at Fort Pickens (*Escambia*) 20 Apr (G. Byerly, M. Walsh).

Black Scoter: 40 offshore at Canaveral National Seashore (*Brevard*) 2-3 Apr (C. Bliznick); 2 at Pelican Island NWR (*Indian River*) 4 Apr (T. Ledford); 1 at Frank Rendon Park (*Volusia*) 3 Apr (D. Gawlik); 2 (1 male/1 female) at Canaveral National Seashore 16 Apr (F. Toan); 1 at Fort De Soto Park 24 Apr (+A. Gyger); 1 at Huguenot Memorial Park 29 May (A. Tanner).

Long-tailed Duck: 2 females at Shiloh Marsh Road (*Volusia*) 24 Mar (+J. Kendall).

Bufflehead: 1 at Overstreet Road (*Orange*) 26 Mar (+B. Elbert); 1 female at W Largo (*Pinellas*) through 27 Mar (+T. Young).

Hooded Merganser: 1 female at Sable Point (*Seminole*) 1 Apr (L. Custer); 1 at Primera Boulevard (*Seminole*) 3 Apr (S. Collins).

Red-breasted Merganser: 3 females at Boggy Creek Road (*Orange*) 1 Mar (J. Wilson); 1 at Sweetwater Wetlands Park 2 May (H. O'Malley).

American Flamingo: 1 at St. Marks NWR (*Wakulla*) 1 Mar-EOS (D. Morrow).

*Least Grebe: 1 at Peaceful Waters Sanctuary (*Palm Beach*) 27 Mar-16 Apr (m. obs.); 1 at Green Cay Wetlands (*Palm Beach*) 26 Apr-7 May (*fide* R. Diaz).

Horned Grebe: 1 at Honeymoon Island SP (*Pinellas*) 17 Apr (+D. Sauvageau).

*Red-necked Grebe: 1 continued at Huguenot Memorial Park through 13 Apr (+D. Foster).

White-crowned Pigeon: 1 at Sebastian Inlet SP Marina (*Brevard*) 26 Apr-5 May (+M. Harris).

*Inca Dove: 1 at Gulf Breeze 29 May (B. Duncan).

*Key West Quail-Dove: 1 at Central Park (*Volusia*) 1 Apr (+*A. Hull); 1 at Dr. Von D. Mizell-Eula Johnson SP (*Broward*) 10 Apr-4 May (M. Berney).

Mangrove Cuckoo: 1 at Fort De Soto Park 14 May (R. Smith).

Black-billed Cuckoo: 1 at Fred Howard Park (*Pinellas*) 20 Apr (T. Mast); 1 at St. Petersburg (*Pinellas*) 28 Apr (M. Hughes).

Smooth-billed Ani: 1 continued at Little Talbot Island SP (*Duval*) through 17 Mar (+K. Dailey, m. obs.); 1 at Belle Glade (*Palm Beach*) 10 Mar-4 May (m. obs.); 2 at Loxahatchee Road (*Palm Beach*) throughout season (G. Parks).

Eastern Whip-poor-will: 1 at Molino 23 Apr (J. Yuhasz).

*Vaux's Swift: Up to 5 at Gainesville to 7 Apr (G. Gonzalez et al.).

Black Rail: 1 at Fort Drum CA (*Indian River*) 2 Mar (T. Towles); 1 at Seminole Ranch CA 14 Mar (+G. Williams); 1 at St. Marks NWR 16 Apr (J. Cavanagh).

Purple Gallinule: 1 at International Paper Wetlands (*Escambia*) 17-23 Mar (J. Callaway, B. Callaway); 1 at Green Cove (*Clay*) 10 April (+J. Graham); 1 at Boyd Hill Nature Preserve (*Pinellas*) 27 Apr (+P. Waton).

Sandhill Crane: 1 at Fort De Soto Park 24 Dec-EOS (*fide* R. Smith).

American Avocet: 12 at Indian Shores (*Pinellas*) 10 Mar (+B. Reynor); 3 at Dayson Basin (*Duval*) 5 Apr (+K. Dailey); 14 at Fort De Soto Park 9 Apr (+R. Smith et al.); 1 at E Gulf Breeze 27 Apr (M. Brower).

American Golden-Plover: 1 at St. Vincent NWR (*Franklin*) 11 Apr (+D. Morrow); 1 at Tom Renick Park (*Volusia*) 11 Apr (H. Robinson).

Semipalmated Plover: 1 at CR 721 (*Highlands*) 9 Apr (G. Kent).

Piping Plover: 1 at Apollo Beach (*Volusia*) 26 May (N. Schwarz).

Upland Sandpiper: 1 at M and M Dairy (*Duval*) 31 Mar (+K. Dailey); 1 at St. George Island (*Franklin*) 14-15 Apr (+S. Parrish); up to 29 at Fort De Soto Park 19 Apr (+W. Tallyn, +E. Plage).

Whimbrel: 13 offshore at Tom Renick Park 15, 17 Apr (H. Robinson); 3 at St. Marks NWR 28 Apr (D. Bryan); 11 at George C. McGough Nature Park (*Pinellas*) 1 May (C. Shavers).

Long-billed Curlew: 1 at Honeymoon Island SP 17 Mar (+V. Roumi); 1 at George C. McGough Nature Park 15 Apr (+T. Young).

Ruddy Turnstone: 1 at Brumley Road Trail (*Seminole*) 11 May (+S. Simmons).

Stilt Sandpiper: 1 at Dayson Basin 5 Apr (+K. Dailey); 1 at Bald Point SP (*Franklin*) 23 Apr (D. Robbins, J. Murphy); 4 at Marl Bed Flats (*Seminole*) 4 May (+G. Leavens); 1 at Seminole Ranch CA 4 May (S. Simmons); 13 at Brumley Road Trail 11 May (+S. Simmons); 6 at Seminole Ranch CA 16 Mar (R. Merrigan).

Sanderling: 2 at Ocklawaha River (*Lake*) 11 May (+D. Richard).

Purple Sandpiper: Up to 2 continued at Huguenot Memorial Park through 13 Apr (K. Dailey).

White-rumped Sandpiper: Up to 3 at Sweetwater Wetlands Park 23-28 Apr (C. Burney et al.); 2 at Fort De Soto Park 5 May (+R. Smith); 1 at St. Vincent NWR 17 May (J. Murphy); 1 at Blount Island (*Duval*) 22 May (+J. Martin).

Semipalmated Sandpiper: Up to 5 at Gainesville 29 Apr-EOS (C. Burney et al.); 2 at Marl Bed Flats 2-4 May (S. Simmons); 4 at Brumley Road Trail 11 May (S. Simmons); 200 at Orlando Wetlands Park 17 Mar (S. Mary).

Short-billed Dowitcher: 1 at Brumley Road Trail 11 May (S. Simmons).

Long-billed Dowitcher: 18 at St. Marks NWR 28 Apr (D. Bryan).

American Woodcock: 1 at Lake Proctor Wilderness Area 25 Apr (L. Malo).

Willet: 1 (eastern) at West Gator Creek Road (*Brevard*) 12 Mar (K. Kendall).

Wilson's Phalarope: 1 at Fort De Soto Park 7 May (+G. Quittner).

Pomarine Jaeger: 85 in one flock flying south at Fort De Soto Park 9 Apr (+D. Simpson, B. Hoffman, E. Plage, R. Smith); 19 flying south at Fort De Soto Park 19 Apr (+E. Plage).

Parasitic Jaeger: 2 at Fort De Soto Park 19 Apr (+E. Plage).

Franklin's Gull: 1 at Frank Rendon Park (*Volusia*) 15 Mar (+M. Brothers).

Ring-billed Gull: 1 at Paynes Prairie Preserve SP (*Alachua*) 14 May (S. Robinson).

*California Gull: 1 at Frank Rendon Park 15 Mar (+M. Brothers).

Iceland Gull: 1 (Thayer's) at Tomoka Farms Landfill (*Volusia*) 4 Apr (+M. Brothers).

Lesser Black-backed Gull: 1 immature at Three Rooker Bar (*Pinellas*) 31 May (+R. Smith, B. Hoffman).

Black Noddy: 1 at Bush Key, Dry Tortugas NP (*Monroe*) 23 Apr-19 May (L. Manfredi).

Bridled Tern: 21 (43-50 nm) offshore at Ponce de Leon Inlet (*Volusia*) 6 Apr (+M. Brothers).

Gull-billed Tern: 3 at Little Big Econ SF 2 Mar (+S. Collins); 1 at Puzzle Lake (*Seminole*) 18 Mar (G. Williams).

Black Tern: 2 at George C. McGough Nature Park 20 Apr (T. Young); 6 offshore Apollo Beach (*Volusia*) 2 May (R. Wallace).

Roseate Tern: 1 offshore at Ponce de Leon Inlet 6 Apr (R. Wallace).

Common Tern: 1 at Jetty Park (*Brevard*) 15 Mar (m. obs.); 220 at Fort De Soto Park 5 May (+R. Smith).

Arctic Tern: 4 offshore Apollo Beach 2 May (R. Wallace); 1 at Jetty Park 2-4 May (+A. Whitlock); 1 at Ponce de Leon Inlet 2 and 8 May (+M. Brothers); 1 at Sebastian Inlet SP 3 May (G. Mina).

Royal Tern: 1 at Sweetwater Wetlands Park 9 Apr (D. Guyn).

White-tailed Tropicbird: 1 adult offshore at Tom Renick Park 18 Apr (H. Robinson).

Red-throated Loon: 1 at Tom Renick Park 10 Mar and 1 Apr (m. obs.); 1 at Turtle Mounds (*Volusia*) 11 Mar (+T. Lee); 1 at Port Causeway Park (*Volusia*) 4 Apr (K. Ramos).

Black-capped Petrel: 2 offshore at Ponce de Leon Inlet 6 Apr (R. Wallace).

*Manx Shearwater: 1 offshore at Playalinda Beach (*Brevard*) 23 May (+*M. Harris).

Wood Stork: 1 at War Veterans' Memorial Park (*Okaloosa*) 26-27 Apr (W. Greene, M. Swan).

Magnificent Frigatebird: 1 at Pensacola Beach (*Escambia*) 8 Apr (B. Duncan, L. Duncan); 1 at St. George Island SP (*Franklin*) 14 Apr (S. Parrish).

Masked Booby: 2 (60 km) offshore at Ponce de Leon Inlet 6 Apr (+M. Brothers); 1 at Jetty Park 2 May (+M. Harris).

Brown Booby: 1 juvenile at Catfish Avenue (*Volusia*) 14 Apr (S. Sujka); 2 offshore (1 adult/1 juvenile) at Tom Renick Park 16-17 Apr (H. Robinson); 1 at Frank Rendon Park 17 Apr (S. Krah); 1 juvenile at Ocean Shore Boulevard (*Volusia*) 9 May (M. Brothers); 1 at Huguenot Memorial Park 15 May (+B. Anderson).

*Neotropic Cormorant: 1 at Crandon Gardens (*Miami-Dade*) 5-20 Mar (m. obs.).

Double-crested Cormorant: 2,650 offshore at Tom Renick Park 3 Apr (H. Robinson).

Brown Pelican: Up to 10 at *Alachua* 19 Mar-5 May (B. Stymeist et al.).

American Bittern: 1 at Ritch Grissom Memorial Wetlands at Viera (*Brevard*) 4 May (R. Anderson); 1 at Lake Apopka Wildlife Drive 12 and 27 May (+J. Mileyka).

Reddish Egret: 2 at Archbold Biological Station (*Highlands*) 26 Apr (J. Fitzpatrick).

Glossy Ibis: 2 at Eastman/Taminco Sanctuary 11-18 Mar (L. Kelly, B. Furlow).

White-faced Ibis: 1 (continuing from winter report) at Lake Apopka Wildlife Drive 2 Mar-14 Apr (m. obs.); 1 at Sweetwater Wetlands Park to 13 Mar (L. Gaudette, P. Polshek et al.); 1 at Lake City Treatment Wetland (*Columbia*) 28 Mar (D. Segal et al.); 1 at Eastpoint (*Franklin*) 27-30 Apr (D. Gaudet, +S. Klink, J. Murphy); 1 at Okaloosa County STF (*Okaloosa*) 11-12 May (M. Swan, B. Purdy).

Roseate Spoonbill: 1 at Gainesville 14 Mar (G. Gonzalez); 2 at St. Marks NWR 28 Apr (D. Bryan); up to 3 at Paynes Prairie Preserve SP 15-30 May (D. Guyn, P. Singh et al.)

Snail Kite: Up to 40 at Paynes Prairie Preserve SP throughout the season, with four active nests observed on 21 Mar (G. Parks, C. Poli et al.); up to 5 (juveniles) at Stenstrom Bridge area (*Volusia*) 2 Mar (m. obs.); 1 at Lake Jessup CA 4 Mar-13 Apr (+G. Williams); 1 at Tosohatchee WMA (*Orange*) 25 Mar-6 Apr (+K. Fisher); 1 at Guana River WMA (*St. Johns*) 5 Apr (D. Reed); 2 at Trout Lake (*Seminole*) 11 Apr (G. Williams); 1 at Orlando Wetlands Park 17 Apr (M. Keim); 1 at Lake Colby (*Volusia*) 2-10 May (+D. LaGrange).

Mississippi Kite: 1 at Lake Apopka Wildlife Drive 10-24 May (M. Neddermeyer); 1 at S Daytona (*Volusia*) 23 May (A. Hull).

Northern Harrier: 1 at Lake Woodruff NWR 1 May (R. Peterson); 1 at Pensacola 2 May (A. Forster); 1 at Parrish Park (*Brevard*) 4 May (C. Venuto); 1 at Heron Run Circle (*Lake*) 12 May (B. Zollner); 1 at Gulf Breeze 20 May (L. Duncan).

BROAD-WINGED HAWK: 1 at Stacy Grove Road (*Volusia*) 11 Apr (R. Wallace); 1 at S Binion Road (*Orange*) 13 Apr (T. Hoar); 1 at Sumterville (*Sumter*) 27 Apr (D. Simpson).

SHORT-TAILED HAWK: 1 dark morph at Wekiva Springs SP (*Orange*) 2 Mar (G. Leavens); 1 light morph at Emeralda Marsh CA (*Lake*) 8 Mar (m. obs.); 1 light morph at Richloam Tract of Withlacoochee State Forest (*Sumter*) 18 Mar (T. Rodriguez); 1 light morph and 3-4 dark morphs at different locations of Richloam Tract of Withlacoochee State Forest (*Sumter*) 22 Mar (B. Pranty, D. Fraser); 1 dark morph at Palm Island Park (*Lake*) 23-29 Mar (+H. Trecartin); 1 dark morph at Lower Wekiva River Preserve (*Seminole*) 7 Apr (L. Malo).

*GOLDEN EAGLE: 1 at Avon Park AFR (*Highlands*) 1 Apr (E. Angell).

BURROWING OWL: Up to 6 at Orlando-Melbourne International Airport (*Brevard*) 1 Mar-17 Apr (m. obs.).

HAIRY WOODPECKER: 1 at St. Sebastian River Preserve SP (*Brevard*) 2-7 Mar (m. obs.); 2 at Clearwater Lake Trail (*Lake*) 12-24 Mar (+R. Smith); 1 at Red Trail, St. Sebastian River Preserve SP 8 Apr (D. Simpson).

NANDAY PARAKEET: 3 at Maritime Hammock Preserve (*Brevard*) 15 May (H. Gornto).

LEAST FLYCATCHER: 1 at Paynes Prairie Preserve SP to 3 Mar (J. Lefever); 1 at Embry-Riddle Campus (*Volusia*) 22 Apr (S. Krah).

VERMILION FLYCATCHER: 1 female at Lake Apopka Wildlife Drive 2 Mar (m. obs.); 1 at Paynes Prairie Preserve SP to 3 Mar (T. O'Leary, J. Lefever).

ASH-THROATED FLYCATCHER: 1 at Lake Apopka Wildlife Drive 3-20 Mar, 5 Apr (m. obs.); 1 at Peaceful Waters Sanctuary 22 Mar-11 Apr (m. obs.); 1 at Fort Pickens 31 Mar-4 Apr (J. Callaway, B. Callaway, D. Stangeland).

GREAT CRESTED FLYCATCHER: 1 at Demetree Park (*Orange*) 10 Mar (T. Rodriguez).

*LA SAGRA'S FLYCATCHER: 1 at A. D. Barnes Park (*Miami-Dade*) 1-24 Mar (m. obs.); 1 at Spanish River Park (*Palm Beach*) 29 Apr-4 May (K. Miller, m. obs.); 1 at Royal Palm, Everglades NP (*Miami-Dade*) 5 May (A. Whitlock).

TROPICAL KINGBIRD: 1 at Box R WMA (*Franklin*) 1 May (+D. Weber).

WESTERN KINGBIRD: 1 at Okaloosa County STF 2-7 Mar (B. Purdy, W. Sharkey); 1 east of Brooksville through 4 Mar (J. McKay); 1 at North Anclote River Nature Park (*Pinellas*) 6 Mar (+B. Cochrane); 1 at Crescent Drive (*Brevard*) 10 Mar-10 Apr (+L. Pernaz-Giz); 1 at Fort De Soto Park 3 Apr (+J. Gibson).

SCISSOR-TAILED FLYCATCHER: 1 at Gulf Breeze 7 Apr (B. Duncan, L. Duncan); 1 at Indian River Lagoon Preserve SP (*Brevard*) 15 Apr (+M. Harris); 1 at Alligator Point 22 Apr (+N. Farnau).

LOGGERHEAD SHRIKE: 1 at Bald Point SP 4 Mar (+J. Murphy).

*THICK-BILLED VIREO: 1 at Marjory Stoneman Douglas Nature Center (*Miami-Dade*) 1-21 Mar (m. obs.); 1 at Castaway Cove (*Indian River*) 27-28 May (+*W. Johnson).

BELL'S VIREO: 1 at Gainesville 29 Mar (G. Parks).

PHILADELPHIA VIREO: 2 at St. George Island SP 19 Apr (S. Parrish, +J. Murphy).

WARBLING VIREO: 1 at St. George Island SP 19 Apr (S. Parrish, +J. Murphy); 1 at Fort De Soto Park 20 Apr (+M. James); 1 at War Veterans' Memorial Park (*Pinellas*) 20-21 Apr (M. Swan, S. Hobson, B. Purdy); 1 at Largo Central Nature Preserve *(Pinellas)* 21 Apr (K. Duncan); 1 at Egmont Key NWR *(Pinellas)* 22 Apr (+E. Plage, P. Plage); 1 at Fort Pickens 23 Apr (J. Callaway, B. Callaway); 1 at Pensacola 5 May (J. Lloyd).

RED-EYED VIREO: 1 at Black Hammock Wilderness Area (*Seminole*) 14 Mar (S. Simmons).

BLACK-WHISKERED VIREO: 1 at Indian River Lagoon Preserve SP (*Brevard*) 11-28 Apr (+M. Harris); 1 at Sebastian Inlet SP 20 Apr-4 May (+W. Johnson); 1 at Jungle Trail (*Indian River*) 20 Apr (+M. Harris); 1 at Lori Wilson Park (*Brevard*) 20 Apr (P. Mansfield); 1 at Samsons Island (*Brevard*) 4 May (+G. Turner); 1 at Fort De Soto Park 4 May (+K. Christman et al.); 1 at Sebastian Inlet SP Marina (*Brevard*) 12-14 May (+A. Whitlock); 2 at Maritime Hammock Sanctuary (*Brevard*) 14-17 May (+M. Harris).

Cliff Swallow: 2 at Eastman/Taminco Sanctuary 5 Mar (L. Kelly, B. Furlow, L. Goodman); 1 at Lake Maggiore *(Pinellas)* 3 Apr (+S. Tavaglione).

Cave Swallow: 1 at Fort De Soto Park 2 Apr (+E. Plage, B. Hoffman); 1 at Lake Maggiore 3 Apr (R. Smith, +J. Clayton); 1 at Bald Point SP 12 Apr (J. Murphy).

Red-breasted Nuthatch: 2 at Alligator Point 1 Mar-2 Apr (+J. Murphy); 1 at a Black Hammock Island feeder (*Duval*) 4 Mar (*fide* K. Dailey); 1 at Pine Meadows CA (*Lake*) 5 Mar-12 Apr (m. obs.); up to 2 at Gainesville to 16 Mar (G. Israel, S. Lasseter); 1 at Bayport through 22 Mar (K. Rosse et al.); 1 at Fort George Island 30 Mar (+D. Foster); 1 at Wekiva Golf Course (*Seminole*) 29 Apr (M. Richardson).

White-breasted Nuthatch: 1 at St. George Island SP 12 May (+S. Klink).

Winter Wren: 1 at War Veterans' Memorial Park 15 Mar (M. Swan).

Marsh Wren: 1 at Lake Apopka Wildlife Drive 4 May (K. Rigling).

*Bewick's Wren: 1 at St. George Island SP 13 May (J. Cavanagh); details to FOSRC.

Golden-crowned Kinglet: 1 at Bald Point SP 8 Mar (J. Murphy); 1 at Citrus Tract of Withlacoochee State Forest 27 Mar (M. Rowley, W. Rowley).

Veery: Up to 7 at *Alachua* 21-27 Apr (F. Lee, E. Martin et al.); 1 at Lake Proctor Wilderness Area (*Seminole*) 26 Apr (L. Malo); 1 at Gulf Breeze 19 May (B. Duncan, L. Duncan).

Gray-cheeked Thrush: Up to 6 at *Alachua* 13 Apr-4 May (F. Goodwin et al.).

Swainson's Thrush: Up to 6 at *Alachua* 21-27 Apr (J. Petersen et al.).

Wood Thrush: Up to 17 at *Alachua* 17 Apr-4 May (F. Goodwin et al.); 8 at Sawgrass Lake Park 23 Apr (+R. Smith, L. Smith); 1 at Harry P. Leu Gardens (*Orange*) 24 Apr (J. Thomton); 1 at Highlands Hammock SP (*Highlands*) 25 Apr (M. Danihel).

American Robin: 3, including one fledgling, at W Jacksonville 29 May (C. Wainwright).

*Red-legged Thrush: 1 at Lantana Nature Preserve 25 Apr (Henry Detwiller, m. obs.).

*Bahama Mockingbird: 1 at Garden Key, Dry Tortugas NP 14-23 Apr (B. Evans, m. obs.); 1 at Lantana Nature Preserve (*Palm Beach*) 20-27 Apr (m. obs.); 1 at Evergreen Cemetery (*Broward*) 3 May (S. McKemy); 1 at Dr. Von D. Mizell-Eula Johnson SP 11-12 May (M. Berney).

*Sprague's Pipit: 1 at Apalachicola (*Franklin*) 28 Mar (A. Zions).

Purple Finch: Up to 8 at *Alachua* to 23 Mar (A. Hawkins, J. O'Connor).

Pine Siskin: 1 at Poneta Avenue (*Volusia*) 16 Mar (S. Cobb); 1 at Wickham Court (*Seminole*) 23 Mar and 2-11 Apr (+R. Stalnaker); up to 21 at *Alachua* to 26 Apr (R. Robinson, R. Rowan et al.); up to 72 at Fleming Island (*Clay*) to 26 Apr (S. Raduns); up to 4 at Brooksville through 27 Mar (K. Rosse et al.).

American Goldfinch: 12 at Columbia City (*Columbia*) 18-19 May (J. Krummrich).

Worm-eating Warbler: 1 at Spring Hammock Preserve (*Seminole*) 24 Mar (S. Krerowicz); up to 8 at Fort De Soto Park 22 Apr (D. Alvarez).

Louisiana Waterthrush: 1 at Blue Springs SP (*Volusia*) 1 Mar (+J. Sherwonit); 1 at Century (*Escambia*) 2 Mar (A. Zions); 1 at Dunedin Hammock Park *(Pinellas)* 5 Mar (K. Duncan).

Northern Waterthrush: 1 at San Felasco Hammock (*Alachua*) 26 May (B. Ewing); 1 at Sweetwater Wetlands Park 31 May (C. Poli).

Golden-winged Warbler: 2 at War Veterans' Memorial Park 20 Apr; 1 female at Boyd Hill Nature Preserve 20 Apr (L. Smith, R. Smith); 1 male at Egmont Key NWR 22 Apr (+E. Plage, P. Plage); 1 male at Fort De Soto Park 27-29 Apr (+S. Daughtrey).

Blue-winged Warbler: 4 at *Alachua* 20-22 Apr (T. Hardin et al.); 8 at Fort De Soto Park 20 Apr (+B. Ahern); 1 at Mead Botanical Gardens (*Orange*) 20 Apr (J. Leavens).

Swainson's Warbler: 4 at Fort De Soto Park 5 Apr (R. Smith, +J. Gibbons); 2 at Boca Ciega Millennium Park 5 Apr (+J. Clayton, S. Aversa); 1 at War Veterans' Memorial Park 9 Apr (+C. Shavers, A. Ruben); 1 at Crystal Lake Avenue (*Orange*) 9 Apr (G. Becker); 1 at Castaway Cove (*Indian River*) 9 Apr (+W. Johnson); 1 at Egmont Key NWR 5 Apr and 22 Apr (+E. Plage, P. Plage); 1 at Mead Botanical Gardens 21-22 Apr (M. Sharpe); 1 at Miccosukee (*Leon*) 24 Apr-20 May (B. Phelan).

Tennessee Warbler: Up to 81 at Fort De Soto Park 20 Apr (B. Ahern et al.).

Orange-crowned Warbler: 1 at Dr. Robert A. Anderson Stormwater Park (*Brevard*) 3 Apr (T. Ledford).

Nashville Warbler: 3 at Little Big Econ SF (*Seminole*) 2 Mar (+S. Collins); 1 at Fort Pickens 5-15 Apr (J. Callaway, B. Callaway et al.); 1 at Sweetwater Wetlands Park 7 Apr (S. Robinson).

Connecticut Warbler: 1 at Sebastian Inlet SP 4-5 May (+M. Harris); 1 at Castaway Cove 13 May (+W. Johnson); 1 at Tallahassee (*Leon*) 15 May (G. Griffin).

Kentucky Warbler: 1 at Mead Botanical Gardens 3 Apr (K. Hamblett); 1 at Gainesville 17 Apr (H. Jones); 1 at *Alachua* 22 Apr (B. Enneis); 1-2 at Fort De Soto Park 28 Apr (B. Hoffman); 2 at Lake Jackson 5 May-EOS (J. Cavanagh).

American Redstart: 1 female at Gemini Springs Park (*Volusia*) 26 Mar (A. Hull); 1 male at Sugar Mill Botanical Gardens (*Volusia*) 4 Apr (J. Kendall).

*Kirtland's Warbler: 1 adult male at Sebastian Inlet SP (*Indian River*) 4-5 May (*+W. Johnson).

Cape May Warbler: 9 at Egmont Key NWR 20 Apr (+E. Plage, P. Plage); 10 at Fort De Soto Park 2 May (+R. Smith).

Cerulean Warbler: 1 at St. George Island SP 19 Apr (J. Murphy); 1 male at War Veterans' Memorial Park 20 Apr (+C. Shavers).

Magnolia Warbler: 1 at Sweetwater Wetlands Park to 6 Apr (C. Wooley et al.); 1 at Gainesville 16 Apr (K. Miller); 1 at Newnans Lake SF 29 Apr (J. Donsky).

Bay-breasted Warbler: 4 at War Veterans' Memorial Park 20 Apr (+C. Shavers); 3 at Caladesi Island SP 5 May (J. McGinity).

Blackburnian Warbler: 1 at Paynes Prairie Preserve SP 2 Apr (B. Pirzer); 1 at War Veterans' Memorial Park 21-22 Apr (+C. Shavers, A. Ruben, W. Meehan); 1 at Sawgrass Lake Park 2 May (+M. Burns).

Yellow Warbler: 4 at *Alachua* 8 Apr-3 May (R. Robinson et al.).

Chestnut-sided Warbler: 3 at Egmont Key NWR 22 Apr (+E. Plage, P. Plage); 22 throughout Pinellas 15-30 Apr with as many as 4 at Boyd Hill Nature Preserve 21 Apr (+J. Clayton).

Yellow-rumped Warbler: 1 remained at Fort De Soto Park through 14 May (*fide* R. Smith, +J. Clayton, C. Shavers).

Black-throated Green Warbler: 1 at College Park (*Orange*) 12 Mar (M. Sharpe).

Wilson's Warbler: 1 at Paynes Prairie Preserve SP to 20 Apr (T. O'Leary et al.); 1 at Gulf Breeze 26 Apr (B. Duncan, L. Duncan).

Yellow-breasted Chat: 1 at Boca Ciega Millennium Park (*Pinellas*) 1 May (C. Shavers).

*Western Spindalis: 1 female at Marjory Stoneman Douglas Nature Center 1 Mar-5 May (m. obs.).

*Bananaquit: 1 at Crandon Park (*Miami-Dade*) 12-17 Mar (m. obs.); 1 at Bill Baggs Cape Florida SP (*Miami-Dade*) 4 May (A. Whitlock).

*Black-faced Grassquit: 1 at Fort Zachary Taylor Historic SP (*Monroe*) 4 Mar (P. Finch, S. Jolly, L. Bobay).

*Spotted Towhee: 1 at Dr. Von D. Mizell-Eula Johnson SP 2 Mar-19 Apr (M. Berney, L. Gles).

Bachman's Sparrow: 1 at Jefferson County Recycling Center 27 May (M. Smith, R. Emond, A. Smith, P. Smith).

Clay-colored Sparrow: 1 continued at S Jacksonville feeder (*Duval*) 1 Mar (C. Phillips); 1 at Sweetwater Wetlands Park to 11 Apr (C. Poli et al.); 1 at Lake Apopka North Shore-McDonald Canal Boat Ramp (*Lake)* 1 Mar-5 Apr (m. obs.); 1 at Smith Creek Landing (*Volusia*) 4 Mar (m. obs.).

Field Sparrow: 1 at E Brooksville through 8 Mar (J. Mann, S. Mann); 1 at South Lake CA (*Brevard*) 12 Mar (G. Peterson); 1 at Lake Apopka Wildlife Drive (*Orange*) 22 Mar (+J. Mileyka).

Vesper Sparrow: 5 remained at Brooker Creek Preserve *(Pinellas)* 16 Mar (+T. Mast).
Lark Sparrow: 1 at Fort Pickens 28 Mar-23 Apr (K. Merkel et al.).
Savannah Sparrow: 3 remained at Brooker Creek Preserve 17 Apr (+T. Mast).
Grasshopper Sparrow: 1 at Fort De Soto Park 5 Apr (+E. Plage).
Henslow's Sparrow: 1 at Hal Scott Preserve and Regional Park (*Orange*) 2 Mar (S. Simmons).
Le Conte's Sparrow: 1at Lake Apopka North Shore Trailhead (*Lake*) 23 Mar (+J. Mileyka).
Nelson's Sparrow: 1 at Shiloh Marsh Road (*Volusia*) 24 Mar (+J. Kendall).
Seaside Sparrow: 7 at St. Vincent NWR 18 May (J. Murphy).
Fox Sparrow: 1 at San Felasco Hammock 24 Mar (J. Mays).
Lincoln's Sparrow: 1 at Lake Apopka North Shore-McDonald Canal boat ramp 12-30 Mar (R. Smith); 1 at Lake Apopka Wildlife Drive 21 Mar (K. Matera).
White-crowned Sparrow: 1 at Sunlake Road (*Brevard*) 2-9 Mar (+T. Perchalski); 1 at Lake Apopka North Shore trailhead 3-9 Mar (L. Mathis); 1 (Gambel's) at Lake Apopka North Shore-McDonald Canal boat ramp 21 Mar-5 Apr (+A. Hull); 1 at Okaloosa County STF 28 Apr (B. Purdy); 1 at Fort Pickens 28 Apr (J. Callaway, B. Callaway).
Dark-eyed Junco: 1 at Gainesville to 24 Mar (B. Pirzer); 1 at Alligator Point 17 May (+J. Murphy).
Summer Tanager: 1 male at Blue Springs SP 10 Mar (+D. LaGrange); 1 at Wekiva Springs SP 12 Mar (P. Hueber); up to 20 at Fort De Soto Park 20 Apr (+J. Clayton).
Scarlet Tanager: Up to 41 at Fort De Soto Park 20 Apr (+B. Ahern).
Western Tanager: 1 at John Taylor Park (*Pinellas*) 14 Mar (K. Nelson); 1 at Possum Branch Preserve (*Pinellas*) 16 Mar (+J. Clayton); up to 2 at Gainesville to 21 Apr (C. Burney, S. Palmer).
Rose-breasted Grosbeak: 1 at Crescent Drive, Melbourne (*Brevard*) 14 Mar (+L. Pernaz-Giz); up to 62 at Fort De Soto Park 20 Apr (+B. Ahern).
Indigo Bunting: Up to 260 at Fort De Soto Park 20 Apr (B. Ahern).
Painted Bunting: 6 at Fort De Soto Park 20 Apr (B. Ahern, R. Smith); 1 male at Lake Apopka Wildlife Drive 24 May (B. Taylor).
Dickcissel: 1 at Indian River Lagoon Preserve SP 20 Apr (+A, Whitlock); 5-6 at Fort De Soto Park 20-21 Apr with 1 remaining through 25 Apr (*fide* R. Smith); 1 at St. Marks NWR 27 Apr (M. Smith, R. Emond, A. Smith, P. Smith).
Bobolink: 1 at Lake Apopka Wildlife Drive 12 Apr (+S. Parr); ca. 200 at N St. Petersburg 23 Apr (+M. Burns, J. Clayton, R. Smith); 1 at Honeymoon Island SP 27 May (R. Smith).
Yellow-headed Blackbird: 1 male at John Taylor Park (*Pinellas*) 1 Apr (+J. O'Shaughnessy).
Rusty Blackbird: 5 at Misty Meadow Road (*Lake*) 1 Apr (L. Streeper).
Shiny Cowbird: 2 at Alligator Point 25 Apr-16 May (+J. Murphy); 1 at Spring Lake Hills (*Seminole*) 3 May (+P. Hueber).
Baltimore Oriole: Up to 15 at Fort De Soto Park 20 Apr (*fide* R. Smith).

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FLORIDA ORNITHOLOGICAL SOCIETY, INC.
TREASURER'S REPORT - 2018

Account balances as of 31 December 2018:

Account	**Balance**
Fidelity Account	$202,856.28
PayPal Account	401.24
Petty Cash	63.26
Total Assets	**$203,320.78**
Sales Tax Liability	(95.58)
Net Assets	**$203,225.20**

Fund balances as of 31 December 2018:

Fund	**Balance**
General Operating Fund	$50,992.83
Special Publications Fund	42,847.89
Cruickshank Fund	45,102.45
Robertson Fund	21,653.73
Endowment Fund	32,717.50
Friends of FFN	4,910.80
Student Travel & Awards Fund	5,000.00
Total Assets	**$203,225.20**

2018 Revenue and Expenses:

Revenue	**Amount**	**Expenses**	**Amount**
Annual Membership Dues	$7,430.09	FFN Printing	$8,811.94
Life Membership Dues	400.00	Postage & Shipping	104.08
Page Charges	250.00	Decrease in investments	16,707.39
Meetings	5,569.00	Operating Expenses	2,710.25
Special Publication Sales	99.01	Cost of T-shirt Sales	958.70
Silent Auction Revenue	1,034.50	Meetings	6,439.81
Shirt Sales	1,308.41	Records Committee	677.32
Miscellaneous	14.00	Cruickshank Award	4,950.00
Gifts, General Operating Fund	860.00	Keys Hawkwatch	350.00
Gifts, Cruickshank Fund	65.00	PayPal Fees	118.00
Gifts, Robertson Fund	175.00		
Gifts, Endowment Fund	70.00		
Gifts, Friends of FFN	650.00		
Total	**$16,890.51**	**Total**	**$41,827.49**

Change in Net Assets:

Totals	**Balance**
Net Assets 31 December 2017	$228,162.18
Total Revenue 2018	16,890.51
Total Expenses 2018	(41,827.49)
Net Assets 31 December 2018	**$203,225.20**

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